



## SEQUENCE LISTING

<110> REINSCHIED, DIETER J.  
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<120> NUCLEIC ACIDS CODING FOR ADHESION FACTORS OF GROUP B  
STREPTOCOCCUS, ADHESION FACTORS OF GROUP B STREPTOCOCCUS  
AND FURTHER USES THEREOF

<130> 116798-002

<140> 10/531,659

<141> 2006-01-26

<150> PCT/EP03/11436

<151> 2003-10-15

<150> EP 02023141.1

<151> 2002-10-15

<150> EP 03006393.7

<151> 2003-03-20

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ccacaacacg	gtggtatttg	tacaattcct	ttcacaaatta	ttggtttaag	cattatgctt	1980
ggagcagtag	ttgtcatgaa	aaaacgtcaa	tcagaggaag	cttaa		2025

<210> 9  
 <211> 1908  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 9  
 atgaaaaaac aattttttaaa atcagcagcg attctatcgc tagcagtaac agcagtatct 60  
 acaagtcagc cggtagccgg gataactaaa gattataata accgaaatga aaaagtaaaa 120  
 aagtatttac aagaaaataa tttcgggtcat aaaatagcgt atggatggaa aaataaagta 180  
 gaatttgatt ttcggtatttt attggatact gctaaatatt tagtaaataa agaagaattt 240  
 caagatcctt tatataatga tgcgcgcgaa gaattgataa gttttatttt tccttatgag 300  
 aaatttttaa ttaacaatcg tgacataact aaattaacag ttaatcagta tgaagcgatt 360  
 gtgaatagaa tgagtgttgc tttacaaaaa ttttcaaaga atatttttga gaaacagaaa 420  
 gtaaaataaag atttaatccc tattgcgttt tggattgaga aaagttacag aactgttgga 480  
 acgaatgaaa tcgccgcttc tgtaggcatt caaggaggat tttatcaaaa cttccatgat 540  
 tattataatt attcatactt attaaattct ttatggcatg aaggaaatgt aaaagaagta 600  
 gttaaggatt atgaaaacac tattcgtcaa atactatcta aaaagcatga gattgaaaaa 660  
 attcttaatc agagcacttc tgatatctct atagatgatg atgattacga aaaaggaaat 720  
 aaagaattgc taagggaaaa attaaatatt attctaaatc tttcaaagag agattacaga 780  
 gtaactccat actatgaagt gaataaacta catacagggc ttattttatt ggaggatgtc 840  
 cctaatttaa agattgctaa ggataagttg ttctcattag agaattcttt aaaggaatac 900  
 aaaggagaga aagttaatta tgaggaacta agattcaata cggaaccttt aactagttac 960  
 ttagaaaaata aagaaaaatt ttagtcccc aatattccat ataaaaataa attaatTTTA 1020  
 agggaagaag ataaatatag ttttgaagat gatgaagaag agtttggaag tgaacttcta 1080  
 agttacaata agcttaagaa tgaagtttta cctgttaata ttacaacttc tactatatta 1140  
 aaaccgtttg aacagaagaa aattgtggaa gattttaatc cttattctaa tttagacaat 1200  
 ttagaaaata aaaaaataag gttgaatggc tcccaaaaaa aaaaagtaga acaggaaaaa 1260  
 actaaatcgc caactcctca aaaagagact gtgaaagaac aaactgagca aaaagtatct 1320  
 ggaaatactc aagaggtaga aaagaaatct gaaactgtgg caacttcaca acaaagttca 1380  
 gttgcgcaaa cttctgtcca acagccggct cgggttcaat cagttgttca agaatccaaa 1440  
 gcttctcaag aggagattaa tgcagcacac gatgctatTT cggcgtataa atcaacagtc 1500  
 aatattgcta atacagccgg tgtaacaact gcggaaatga ccacgctcat taatactcaa 1560  
 acttctaate tttctgatgt tgagaaagct ttaggaaata ataaggTTaa taatgggtga 1620  
 gtcaatgtat tgagagaaga tacagctcgt cttgagaata tgatttgga tcgtgcttac 1680  
 caagctattg aagaattcaa cgtcgcctcgt aatacttata ataaccaaT caagacagaa 1740  
 acagttccag ttgataatga tattgaagct attttagcag gttctcaagc taaaattagc 1800  
 catttggaac atcgtatcgg agcgcgccac atggatcaag cttttgtagc tagtttatta 1860  
 gaagttactg agatgagtaa atcaatctca tcgcgtataa aagagtag 1908

<210> 10  
 <211> 546  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 10  
 atgaaaaaaa taacaacttt aatcttagct agtagcttat tactagttgc aacgacatcg 60  
 gttaaagctg atgataactt tgaaatgcca acgcgttatg ttaaaatgag tgaaaaatca 120  
 aaagcatttt atcaaagact acaagaaaaa caacgtaagg cacatactac tgtgaagact 180  
 ttttaataatt cagaaataag gcatcaacta cctcttaaac aagaaaaggc tagaaatgat 240  
 atctacaatt taggcattct tatttctcag gagtctaaag ggttcatcca acgtattgat 300  
 aatgcctatt ctttggaaaa tgtctcagat attgttaatg aagctcaggc tttgtataaa 360  
 cgtaactatg atttatTTga aaaaatcaaa tctacacgtg ataaggTTca agtcttactt 420  
 gcacgcgcatc aagataatac agacttaaaa aacttttatg ctgagttaga tgatatgtat 480  
 gaacatgTTt atctcaatga aagtagagtg gaggcgataa acagaaatat ccaaaaatat 540  
 aattag 546

<210> 11  
 <211> 442  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 11  
 Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
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 Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
 20 25 30  
 Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
 35 40 45  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 50 55 60  
 Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 65 70 75 80  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
 85 90 95  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 100 105 110  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 115 120 125  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 130 135 140  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 145 150 155 160  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 165 170 175  
 Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 180 185 190  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
 195 200 205  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 210 215 220  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 225 230 235 240  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 245 250 255  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 260 265 270

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                   275                  280                  285  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                   290                  295                  300  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 305                                  310                  315                  320  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   325                  330                  335  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Val Gly Gln Leu  
                                   340                  345                  350  
 Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Ile Ile Ser Arg Glu Asn  
                   355                  360                  365  
 Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
                   370                  375                  380  
 Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
 385                                  390                  395                  400  
 Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
                                   405                  410                  415  
 Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
                                   420                  425                  430  
 Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
                   435                  440

<210> 12  
 <211> 410  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 12  
 Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
 1                                  5                  10                  15  
 Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Ser  
                   20                  25                  30  
 Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
                   35                  40                  45  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                   50                  55                  60  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                   65                  70                  75                  80  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   85                  90                  95



Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu		
			100					105					110				
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
			115				120					125					
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu		
			130			135					140						
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
145					150					155					160		
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
			165						170					175			
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
			180					185					190				
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu		
			195				200					205					
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
210					215						220						
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
225					230					235					240		
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
			245						250					255			
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu		
			260					265					270				
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu		
			275				280					285					
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu		
290					295						300						
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Val	Gly	Gln	Leu		
305					310					315					320		
Ile	Gly	Lys	Asn	Pro	Leu	Leu	Ser	Lys	Ser	Ile	Ile	Ser	Arg	Glu	Asn		
			325						330					335			
Asn	His	Ser	Ser	Gln	Gly	Asp	Ser	Asn	Lys	Gln	Ser	Phe	Ser	Lys	Lys		
			340					345					350				
Val	Ser	Gln	Val	Thr	Asn	Val	Ala	Asn	Arg	Pro	Met	Leu	Thr	Asn	Asn		
		355					360					365					
Ser	Arg	Thr	Ile	Ser	Val	Ile	Asn	Lys	Leu	Pro	Lys	Thr	Gly	Asp	Asp		
370					375						380						
Gln	Asn	Val	Ile	Phe	Lys	Leu	Val	Gly	Phe	Gly	Leu	Ile	Leu	Leu	Thr		
385					390					395					400		

Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
 405 410

<210> 13

<211> 346

<212> PRT

<213> Streptococcus agalactiae

<400> 13

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
 1 5 10 15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
 20 25 30

Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
 35 40 45

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
 50 55 60

Glu Arg Arg Gln Arg Asp Val Glu Asn Arg Ser Gln Gly Asn Val Leu  
 65 70 75 80

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
 85 90 95

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
 100 105 110

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 115 120 125

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
 130 135 140

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
 145 150 155 160

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 165 170 175

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 180 185 190

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
 195 200 205

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
 210 215 220

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 225 230 235 240

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Val Gly Gln Leu  
 245 250 255

Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Thr Ile Ser Arg Glu Asn  
                   260                  265                  270

Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
                   275                  280                  285

Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
           290                  295                  300

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
   305                  310                  315                  320

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
                   325                  330                  335

Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
                   340                  345

<210> 14  
 <211> 186  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 14  
 Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
   1                  5                  10                  15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
           20                  25                  30

Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
           35                  40                  45

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
   50                  55                  60

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
   65                  70                  75                  80

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Val Gly Gln Leu  
           85                  90                  95

Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Ile Ile Ser Arg Glu Asn  
           100                  105                  110

Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
           115                  120                  125

Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
   130                  135                  140

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
   145                  150                  155                  160

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
           165                  170                  175

Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
 180 185

<210> 15

<211> 298

<212> PRT

<213> Streptococcus agalactiae

<400> 15

Met	Phe	Asn	Lys	Ile	Gly	Phe	Arg	Thr	Trp	Lys	Ser	Gly	Lys	Leu	Trp	1	5	10	15
Leu	Tyr	Met	Gly	Val	Leu	Gly	Ser	Thr	Ile	Ile	Leu	Gly	Ser	Ser	Pro	20	25	30	
Val	Ser	Ala	Met	Asp	Ser	Val	Gly	Asn	Gln	Ser	Gln	Gly	Asn	Val	Leu	35	40	45	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu	50	55	60	
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	65	70	75	80
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	85	90	95	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu	100	105	110	
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	115	120	125	
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	130	135	140	
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	145	150	155	160
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	165	170	175	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu	180	185	190	
Glu	Arg	Arg	Gln	His	Asp	Val	Glu	Asn	Lys	Ser	Gln	Val	Gly	Gln	Leu	195	200	205	
Ile	Gly	Lys	Asn	Pro	Leu	Phe	Ser	Lys	Ser	Thr	Val	Ser	Arg	Glu	Asn	210	215	220	
Asn	His	Ser	Ser	Gln	Gly	Asp	Ser	Asn	Lys	Gln	Ser	Phe	Ser	Lys	Lys	225	230	235	240
Val	Ser	Gln	Val	Thr	Asn	Val	Ala	Asn	Arg	Pro	Met	Leu	Thr	Asn	Asn	245	250	255	

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
260 265 270

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
275 280 285

Ser Leu Cys Gly Leu Arg Arg Asn Glu Asn  
290 295

<210> 16

<211> 618

<212> PRT

<213> Streptococcus agalactiae

<400> 16

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
1 5 10 15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
20 25 30

Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
35 40 45

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
50 55 60

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
65 70 75 80

Glu Arg Arg Gln Arg Asp Val Asp Asn Lys Ser Gln Gly Asn Val Leu  
85 90 95

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
100 105 110

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
115 120 125

Glu Arg Arg Gln Arg Asp Val Asp Asn Lys Ser Gln Gly Asn Val Leu  
130 135 140

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
145 150 155 160

Glu Arg Arg Gln Arg Asp Val Asp Asn Lys Ser Gln Gly Asn Val Leu  
165 170 175

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
180 185 190

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
195 200 205

Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
210 215 220

Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
225					230					235					240
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
				245					250					255	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			260					265					270		
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
		275					280					285			
Glu	Arg	Arg	Gln	Arg	Asp	Val	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
		290				295					300				
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
305					310					315					320
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			325						330					335	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			340					345					350		
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
		355					360					365			
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
		370				375					380				
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
385					390					395					400
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			405						410					415	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			420					425					430		
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
		435					440					445			
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
		450				455					460				
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
465					470					475					480
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			485						490					495	
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			500					505					510		
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Val	Gly	Gln	Leu
		515					520					525			

Ile Gly Lys Asn Pro Leu Phe Ser Lys Ser Thr Val Ser Arg Glu Asn  
 530 535 540  
 Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
 545 550 555 560  
 Ile Ser Gln Val Thr Asn Val Ala Asn Gly Pro Met Leu Thr Asn Asn  
 565 570 575  
 Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
 580 585 590  
 Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
 595 600 605  
 Ser Leu Cys Gly Leu Arg Arg Asn Glu Asn  
 610 615

<210> 17  
 <211> 901  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 17  
 Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu Thr Leu Ser Leu Phe  
 1 5 10 15  
 Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr  
 20 25 30  
 Val Pro Glu Asn Gly Ala Lys Gly Lys Leu Val Val Lys Lys Thr Asp  
 35 40 45  
 Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr  
 50 55 60  
 Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly  
 65 70 75 80  
 Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu  
 85 90 95  
 Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn Gln Thr Trp Gln Val  
 100 105 110  
 Lys Val Glu Ser Asn Gly Lys Thr Thr Ile Gln Asn Ser Gly Asp Lys  
 115 120 125  
 Asn Ser Thr Ile Gly Gln Asn His Glu Glu Leu Asp Lys Gln Tyr Pro  
 130 135 140  
 Pro Thr Gly Ile Tyr Glu Asp Thr Lys Glu Ser Tyr Lys Leu Glu His  
 145 150 155 160  
 Val Lys Gly Ser Val Pro Asn Gly Lys Ser Glu Ala Lys Ala Val Asn  
 165 170 175

Pro	Tyr	Ser	Ser	Glu	Gly	Glu	His	Ile	Arg	Glu	Ile	Pro	Glu	Gly	Thr
			180					185					190		
Leu	Ser	Lys	Arg	Ile	Ser	Glu	Val	Gly	Asp	Leu	Ala	His	Asn	Lys	Tyr
		195					200					205			
Lys	Ile	Glu	Leu	Thr	Val	Ser	Gly	Lys	Thr	Ile	Val	Lys	Pro	Val	Asp
	210					215					220				
Lys	Gln	Lys	Pro	Leu	Asp	Val	Val	Phe	Val	Leu	Asp	Asn	Ser	Asn	Ser
225					230					235					240
Met	Asn	Asn	Asp	Gly	Pro	Asn	Phe	Gln	Arg	His	Asn	Lys	Ala	Lys	Lys
				245					250					255	
Ala	Ala	Glu	Ala	Leu	Gly	Thr	Ala	Val	Lys	Asp	Ile	Leu	Gly	Ala	Asn
			260					265					270		
Ser	Asp	Asn	Arg	Val	Ala	Leu	Val	Thr	Tyr	Gly	Ser	Asp	Ile	Phe	Asp
		275					280					285			
Gly	Arg	Ser	Val	Asp	Val	Val	Lys	Gly	Phe	Lys	Glu	Asp	Asp	Lys	Tyr
	290					295					300				
Tyr	Gly	Leu	Gln	Thr	Lys	Phe	Thr	Ile	Gln	Thr	Glu	Asn	Tyr	Ser	His
305					310					315					320
Lys	Gln	Leu	Thr	Asn	Asn	Ala	Glu	Glu	Ile	Ile	Lys	Arg	Ile	Pro	Thr
				325					330					335	
Glu	Ala	Pro	Arg	Ala	Lys	Trp	Gly	Ser	Thr	Thr	Asn	Gly	Leu	Thr	Pro
			340					345					350		
Glu	Gln	Gln	Lys	Gln	Tyr	Tyr	Leu	Ser	Lys	Val	Gly	Glu	Thr	Phe	Thr
		355					360					365			
Met	Lys	Ala	Phe	Met	Glu	Ala	Asp	Asp	Ile	Leu	Ser	Gln	Val	Asp	Arg
	370					375					380				
Asn	Ser	Gln	Lys	Ile	Ile	Val	His	Ile	Thr	Asp	Gly	Val	Pro	Thr	Arg
385					390					395					400
Ser	Tyr	Ala	Ile	Asn	Asn	Phe	Lys	Leu	Gly	Ala	Ser	Tyr	Glu	Ser	Gln
				405					410					415	
Phe	Glu	Gln	Met	Lys	Lys	Asn	Gly	Tyr	Leu	Asn	Lys	Ser	Asn	Phe	Leu
			420					425					430		
Leu	Thr	Asp	Lys	Pro	Glu	Asp	Ile	Lys	Gly	Asn	Gly	Glu	Ser	Tyr	Phe
		435					440					445			
Leu	Phe	Pro	Leu	Asp	Ser	Tyr	Gln	Thr	Gln	Ile	Ile	Ser	Gly	Asn	Leu
	450					455					460				
Gln	Lys	Leu	His	Tyr	Leu	Asp	Leu	Asn	Leu	Asn	Tyr	Pro	Lys	Gly	Thr
465					470					475					480



Ile	Tyr	Arg	Asn	Gly	Pro	Val	Arg	Glu	His	Gly	Thr	Pro	Thr	Lys	Leu	485	490	495
Tyr	Ile	Asn	Ser	Leu	Lys	Gln	Lys	Asn	Tyr	Asp	Ile	Phe	Asn	Phe	Gly	500	505	510
Ile	Asp	Ile	Ser	Ala	Phe	Arg	Gln	Val	Tyr	Asn	Glu	Asp	Tyr	Lys	Lys	515	520	525
Asn	Gln	Asp	Gly	Thr	Phe	Gln	Lys	Leu	Lys	Glu	Glu	Ala	Phe	Glu	Leu	530	535	540
Ser	Asp	Gly	Glu	Ile	Thr	Glu	Leu	Met	Lys	Ser	Phe	Ser	Ser	Lys	Pro	545	550	555
Glu	Tyr	Tyr	Thr	Pro	Ile	Val	Thr	Ser	Ser	Asp	Ala	Ser	Asn	Asn	Glu	565	570	575
Ile	Leu	Ser	Lys	Ile	Gln	Gln	Gln	Phe	Glu	Lys	Val	Leu	Thr	Lys	Glu	580	585	590
Asn	Ser	Ile	Val	Asn	Gly	Thr	Ile	Glu	Asp	Pro	Met	Gly	Asp	Lys	Ile	595	600	605
Asn	Leu	Gln	Leu	Gly	Asn	Gly	Gln	Thr	Leu	Gln	Pro	Ser	Asp	Tyr	Thr	610	615	620
Leu	Gln	Gly	Asn	Asp	Gly	Ser	Ile	Met	Lys	Asp	Ser	Ile	Ala	Thr	Gly	625	630	635
Gly	Pro	Asn	Asn	Asp	Gly	Gly	Ile	Leu	Lys	Gly	Val	Lys	Leu	Glu	Tyr	645	650	655
Ile	Lys	Asn	Lys	Leu	Tyr	Val	Arg	Gly	Leu	Asn	Leu	Gly	Glu	Gly	Gln	660	665	670
Lys	Val	Thr	Leu	Thr	Tyr	Asp	Val	Lys	Leu	Asp	Asp	Ser	Phe	Ile	Ser	675	680	685
Asn	Lys	Phe	Tyr	Asp	Thr	Asn	Gly	Arg	Thr	Thr	Leu	Asn	Pro	Lys	Ser	690	695	700
Glu	Asp	Pro	Asn	Thr	Leu	Arg	Asp	Phe	Pro	Ile	Pro	Lys	Ile	Arg	Asp	705	710	715
Val	Arg	Glu	Tyr	Pro	Thr	Ile	Thr	Ile	Lys	Asn	Glu	Lys	Lys	Leu	Gly	725	730	735
Glu	Ile	Glu	Phe	Thr	Lys	Val	Asp	Lys	Asp	Asn	Asn	Lys	Leu	Leu	Leu	740	745	750
Lys	Gly	Ala	Thr	Phe	Glu	Leu	Gln	Glu	Phe	Asn	Glu	Asp	Tyr	Lys	Leu	755	760	765
Tyr	Leu	Pro	Ile	Lys	Asn	Asn	Asn	Ser	Lys	Val	Val	Thr	Gly	Glu	Asn	770	775	780

Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile  
 785 790 795 800  
 Glu Ala Val Ser Pro Lys Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile  
 805 810 815  
 Leu Thr Phe Glu Val Val Lys Gly Ser Ile Gln Asn Ile Ile Ala Val  
 820 825 830  
 Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile  
 835 840 845  
 Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly  
 850 855 860  
 Lys Gly Ile Leu Ser Phe Ile Leu Ile Gly Gly Ser Met Met Ser Ile  
 865 870 875 880  
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 885 890 895  
 Ser Arg Glu Lys Asp  
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 <212> PRT  
 <213> Streptococcus agalactiae

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 Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met Pro Gln Ala Ala  
 35 40 45  
 Phe Asp Asn Phe Thr Glu Gly Thr Lys Gly Lys Asn Asp Ser Asp Tyr  
 50 55 60  
 Val Gly Lys Gln Ile Asn Asp Leu Lys Ser Tyr Phe Gly Ser Thr Asp  
 65 70 75 80  
 Ala Lys Glu Ile Lys Gly Ala Phe Phe Val Phe Lys Asn Glu Thr Gly  
 85 90 95  
 Thr Lys Phe Ile Thr Glu Asn Gly Lys Glu Val Asp Thr Leu Glu Ala  
 100 105 110  
 Lys Asp Ala Glu Gly Gly Ala Val Leu Ser Gly Leu Thr Lys Asp Thr  
 115 120 125  
 Gly Phe Ala Phe Asn Thr Ala Lys Leu Lys Gly Thr Tyr Gln Ile Val  
 130 135 140

Glu	Leu	Lys	Glu	Lys	Ser	Asn	Tyr	Asp	Asn	Asn	Gly	Ser	Ile	Leu	Ala	
145					150					155					160	
Asp	Ser	Lys	Ala	Val	Pro	Val	Lys	Ile	Thr	Leu	Pro	Leu	Val	Asn	Asn	
				165					170					175		
Gln	Gly	Val	Val	Lys	Asp	Ala	His	Ile	Tyr	Pro	Lys	Asn	Thr	Glu	Thr	
			180					185					190			
Lys	Pro	Gln	Val	Asp	Lys	Asn	Phe	Ala	Asp	Lys	Asp	Leu	Asp	Tyr	Thr	
		195					200					205				
Asp	Asn	Arg	Lys	Asp	Lys	Gly	Val	Val	Ser	Ala	Thr	Val	Gly	Asp	Lys	
	210					215					220					
Lys	Glu	Tyr	Ile	Val	Gly	Thr	Lys	Ile	Leu	Lys	Gly	Ser	Asp	Tyr	Lys	
225					230					235					240	
Lys	Leu	Val	Trp	Thr	Asp	Ser	Met	Thr	Lys	Gly	Leu	Thr	Phe	Asn	Asn	
				245					250					255		
Asn	Val	Lys	Val	Thr	Leu	Asp	Gly	Lys	Asp	Phe	Pro	Val	Leu	Asn	Tyr	
			260					265					270			
Lys	Leu	Val	Thr	Asp	Asp	Gln	Gly	Phe	Arg	Leu	Ala	Leu	Asn	Ala	Thr	
		275					280					285				
Gly	Leu	Ala	Ala	Val	Ala	Ala	Ala	Ala	Lys	Asp	Lys	Asp	Val	Glu	Ile	
	290					295					300					
Lys	Ile	Thr	Tyr	Ser	Ala	Thr	Val	Asn	Gly	Ser	Thr	Thr	Val	Glu	Val	
305					310					315					320	
Pro	Glu	Thr	Asn	Asp	Val	Lys	Leu	Asp	Tyr	Gly	Asn	Asn	Pro	Thr	Glu	
				325					330					335		
Glu	Ser	Glu	Pro	Gln	Glu	Gly	Thr	Pro	Ala	Asn	Gln	Glu	Ile	Lys	Val	
			340					345					350			
Ile	Lys	Asp	Trp	Ala	Val	Asp	Gly	Thr	Ile	Thr	Asp	Val	Asn	Val	Ala	
		355					360					365				
Val	Lys	Ala	Ile	Phe	Thr	Leu	Gln	Glu	Lys	Gln	Thr	Asp	Gly	Thr	Trp	
		370				375					380					
Val	Asn	Val	Ala	Ser	His	Glu	Ala	Thr	Lys	Pro	Ser	Arg	Phe	Glu	His	
385					390					395					400	
Thr	Phe	Thr	Gly	Leu	Asp	Asn	Thr	Lys	Thr	Tyr	Arg	Val	Val	Glu	Arg	
				405					410					415		
Val	Ser	Gly	Tyr	Thr	Pro	Glu	Tyr	Val	Ser	Phe	Lys	Asn	Gly	Val	Val	
			420					425					430			
Thr	Ile	Lys	Asn	Asn	Lys	Asn	Ser	Asn	Asp	Pro	Thr	Pro	Ile	Asn	Pro	
		435					440					445				

Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn  
 450 455 460  
 Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys  
 465 470 475 480  
 Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala  
 485 490 495  
 Lys Ala Ala Val Lys Thr Ala Lys Leu Ala Leu Asp Glu Ala Val Lys  
 500 505 510  
 Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Glu Gly Lys  
 515 520 525  
 Thr Ala Leu Ala Thr Val Asp Gln Lys Gln Lys Ala Tyr Asn Asp Ala  
 530 535 540  
 Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp Val Ala Asp Lys Lys Ala  
 545 550 555 560  
 Asp Asn Val Val Lys Leu Ile Ser Asn Ala Gly Gly Gln Phe Glu Ile  
 565 570 575  
 Thr Gly Leu Asp Lys Gly Thr Tyr Ser Leu Glu Glu Thr Gln Ala Pro  
 580 585 590  
 Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala  
 595 600 605  
 Thr Ser Tyr Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly  
 610 615 620  
 Ser Val Lys Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr Ile  
 625 630 635 640  
 Pro Gln Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile Ile Gly Leu  
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Glu Ala

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 <212> PRT  
 <213> Streptococcus agalactiae

<400> 19  
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 Thr Ala Val Ser Thr Ser Gln Pro Val Ala Gly Ile Thr Lys Asp Tyr  
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Asn	Asn	Arg	Asn	Glu	Lys	Val	Lys	Lys	Tyr	Leu	Gln	Glu	Asn	Asn	Phe	
		35					40					45				
Gly	His	Lys	Ile	Ala	Tyr	Gly	Trp	Lys	Asn	Lys	Val	Glu	Phe	Asp	Phe	
	50					55					60					
Arg	Tyr	Leu	Leu	Asp	Thr	Ala	Lys	Tyr	Leu	Val	Asn	Lys	Glu	Glu	Phe	
65					70					75					80	
Gln	Asp	Pro	Leu	Tyr	Asn	Asp	Ala	Arg	Glu	Glu	Leu	Ile	Ser	Phe	Ile	
				85					90					95		
Phe	Pro	Tyr	Glu	Lys	Phe	Leu	Ile	Asn	Asn	Arg	Asp	Ile	Thr	Lys	Leu	
			100					105					110			
Thr	Val	Asn	Gln	Tyr	Glu	Ala	Ile	Val	Asn	Arg	Met	Ser	Val	Ala	Leu	
			115				120					125				
Gln	Lys	Phe	Ser	Lys	Asn	Ile	Phe	Glu	Lys	Gln	Lys	Val	Asn	Lys	Asp	
	130					135					140					
Leu	Ile	Pro	Ile	Ala	Phe	Trp	Ile	Glu	Lys	Ser	Tyr	Arg	Thr	Val	Gly	
145					150					155					160	
Thr	Asn	Glu	Ile	Ala	Ala	Ser	Val	Gly	Ile	Gln	Gly	Gly	Phe	Tyr	Gln	
				165				170						175		
Asn	Phe	His	Asp	Tyr	Tyr	Asn	Tyr	Ser	Tyr	Leu	Leu	Asn	Ser	Leu	Trp	
			180					185					190			
His	Glu	Gly	Asn	Val	Lys	Glu	Val	Val	Lys	Asp	Tyr	Glu	Asn	Thr	Ile	
		195					200					205				
Arg	Gln	Ile	Leu	Ser	Lys	Lys	His	Glu	Ile	Glu	Lys	Ile	Leu	Asn	Gln	
	210					215					220					
Ser	Thr	Ser	Asp	Ile	Ser	Ile	Asp	Asp	Asp	Asp	Tyr	Glu	Lys	Gly	Asn	
225					230					235					240	
Lys	Glu	Leu	Leu	Arg	Glu	Lys	Leu	Asn	Ile	Ile	Leu	Asn	Leu	Ser	Lys	
				245				250						255		
Arg	Asp	Tyr	Arg	Val	Thr	Pro	Tyr	Tyr	Glu	Val	Asn	Lys	Leu	His	Thr	
			260					265					270			
Gly	Leu	Ile	Leu	Leu	Glu	Asp	Val	Pro	Asn	Leu	Lys	Ile	Ala	Lys	Asp	
	275						280					285				
Lys	Leu	Phe	Ser	Leu	Glu	Asn	Ser	Leu	Lys	Glu	Tyr	Lys	Gly	Glu	Lys	
	290					295					300					
Val	Asn	Tyr	Glu	Glu	Leu	Arg	Phe	Asn	Thr	Glu	Pro	Leu	Thr	Ser	Tyr	
305					310					315					320	
Leu	Glu	Asn	Lys	Glu	Lys	Phe	Leu	Val	Pro	Asn	Ile	Pro	Tyr	Lys	Asn	
				325					330					335		

Lys Leu Ile Leu Arg Glu Glu Asp Lys Tyr Ser Phe Glu Asp Asp Glu  
 340 345 350  
 Glu Glu Phe Gly Asn Glu Leu Leu Ser Tyr Asn Lys Leu Lys Asn Glu  
 355 360 365  
 Val Leu Pro Val Asn Ile Thr Thr Ser Thr Ile Leu Lys Pro Phe Glu  
 370 375 380  
 Gln Lys Lys Ile Val Glu Asp Phe Asn Pro Tyr Ser Asn Leu Asp Asn  
 385 390 395 400  
 Leu Glu Ile Lys Lys Ile Arg Leu Asn Gly Ser Gln Lys Gln Lys Val  
 405 410 415  
 Glu Gln Glu Lys Thr Lys Ser Pro Thr Pro Gln Lys Glu Thr Val Lys  
 420 425 430  
 Glu Gln Thr Glu Gln Lys Val Ser Gly Asn Thr Gln Glu Val Glu Lys  
 435 440 445  
 Lys Ser Glu Thr Val Ala Thr Ser Gln Gln Ser Ser Val Ala Gln Thr  
 450 455 460  
 Ser Val Gln Gln Pro Ala Pro Val Gln Ser Val Val Gln Glu Ser Lys  
 465 470 475 480  
 Ala Ser Gln Glu Glu Ile Asn Ala Ala His Asp Ala Ile Ser Ala Tyr  
 485 490 495  
 Lys Ser Thr Val Asn Ile Ala Asn Thr Ala Gly Val Thr Thr Ala Glu  
 500 505 510  
 Met Thr Thr Leu Ile Asn Thr Gln Thr Ser Asn Leu Ser Asp Val Glu  
 515 520 525  
 Lys Ala Leu Gly Asn Asn Lys Val Asn Asn Gly Ala Val Asn Val Leu  
 530 535 540  
 Arg Glu Asp Thr Ala Arg Leu Glu Asn Met Ile Trp Asn Arg Ala Tyr  
 545 550 555 560  
 Gln Ala Ile Glu Glu Phe Asn Val Ala Arg Asn Thr Tyr Asn Asn Gln  
 565 570 575  
 Ile Lys Thr Glu Thr Val Pro Val Asp Asn Asp Ile Glu Ala Ile Leu  
 580 585 590  
 Ala Gly Ser Gln Ala Lys Ile Ser His Leu Asp Asn Arg Ile Gly Ala  
 595 600 605  
 Arg His Met Asp Gln Ala Phe Val Ala Ser Leu Leu Glu Val Thr Glu  
 610 615 620  
 Met Ser Lys Ser Ile Ser Ser Arg Ile Lys Glu  
 625 630 635

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 <212> PRT  
 <213> Streptococcus agalactiae

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 Tyr Val Lys Met Ser Glu Lys Ser Lys Ala Phe Tyr Gln Arg Leu Gln  
 35 40 45  
 Glu Lys Gln Arg Lys Ala His Thr Thr Val Lys Thr Phe Asn Asn Ser  
 50 55 60  
 Glu Ile Arg His Gln Leu Pro Leu Lys Gln Glu Lys Ala Arg Asn Asp  
 65 70 75 80  
 Ile Tyr Asn Leu Gly Ile Leu Ile Ser Gln Glu Ser Lys Gly Phe Ile  
 85 90 95  
 Gln Arg Ile Asp Asn Ala Tyr Ser Leu Glu Asn Val Ser Asp Ile Val  
 100 105 110  
 Asn Glu Ala Gln Ala Leu Tyr Lys Arg Asn Tyr Asp Leu Phe Glu Lys  
 115 120 125  
 Ile Lys Ser Thr Arg Asp Lys Val Gln Val Leu Leu Ala Ser His Gln  
 130 135 140  
 Asp Asn Thr Asp Leu Lys Asn Phe Tyr Ala Glu Leu Asp Asp Met Tyr  
 145 150 155 160  
 Glu His Val Tyr Leu Asn Glu Ser Arg Val Glu Ala Ile Asn Arg Asn  
 165 170 175  
 Ile Gln Lys Tyr Asn  
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<210> 21  
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 <212> DNA  
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48

<210> 22  
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 <212> DNA  
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<400> 22  
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<210> 24  
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<210> 25  
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<210> 27  
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<210> 28  
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<210> 29  
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<210> 30  
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<210> 32  
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<400> 32  
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<210> 33  
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<400> 34  
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<210> 36  
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<400> 36  
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<210> 37  
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<400> 37  
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<400> 38  
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<210> 41  
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 <400> 43  
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 <212> DNA  
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 <400> 44  
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 <210> 45  
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 <400> 45  
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 <210> 46  
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 <400> 46  
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 <210> 47  
 <211> 48  
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<210> 48  
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 <400> 49  
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 <210> 50  
 <211> 48  
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 <210> 51  
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 <210> 52  
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&lt;211&gt; 16

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&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 118

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&lt;210&gt; 119

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 119

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&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 120

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&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 121

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&lt;210&gt; 122

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 122

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 123

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 123

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&lt;210&gt; 124

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 124

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&lt;210&gt; 125

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 125

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
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&lt;210&gt; 126

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 126

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
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&lt;210&gt; 127

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 127

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&lt;210&gt; 128

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 128

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&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 135

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&lt;210&gt; 136

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 136

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1				5					10					15	

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&lt;211&gt; 16

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&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 137

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&lt;210&gt; 138

&lt;211&gt; 16

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&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 138

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&lt;210&gt; 139

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 139

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&lt;400&gt; 151

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&lt;210&gt; 152

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 152

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 153

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 153

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 154

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 154

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 155

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 155

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1				5					10					15	

&lt;210&gt; 156

&lt;211&gt; 16

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&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 156

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 157

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 157

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 158

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 158

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 159

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 159

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 160

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 160

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 161

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 161

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 162

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 162

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 163  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 163  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln  
 1 5 10 15

<210> 164  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 164  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln  
 1 5 10 15

<210> 165  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 165  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln  
 1 5 10 15

<210> 166  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 166  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln  
 1 5 10 15

<210> 167  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 167  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln  
 1 5 10 15

<210> 168  
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 <212> PRT  
 <213> Streptococcus agalactiae

&lt;400&gt; 168

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

&lt;210&gt; 169

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 169

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 170

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 170

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 171

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 171

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 172

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 172

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 173

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 173

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	



&lt;210&gt; 174

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 174

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	His	Asp	Val	Glu	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 175

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 175

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 176

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 176

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 177

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 177

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 178

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 178

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 179

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 179

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

<210> 180  
 <211> 16  
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 <213> Streptococcus agalactiae

<400> 180  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 181  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 181  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 182  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 182  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 183  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 183  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 184  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 184  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 185  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

&lt;400&gt; 185

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 186

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 186

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 187

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 187

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 188

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 188

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 189

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 189

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

&lt;210&gt; 190

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 190

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Asp	Asn	Lys	Ser	Gln
1				5					10					15	

<210> 191  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 191  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 192  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 192  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 193  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 193  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 194  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 194  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 195  
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 <212> PRT  
 <213> Streptococcus agalactiae

<400> 195  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 196  
 <211> 16  
 <212> PRT  
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<400> 196  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 197  
 <211> 16  
 <212> PRT  
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<400> 197  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 198  
 <211> 16  
 <212> PRT  
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<400> 198  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 199  
 <211> 16  
 <212> PRT  
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<400> 199  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 200  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 200  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 201  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 201  
 Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
 1 5 10 15

<210> 202  
 <211> 16  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 202

Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
1 5 10 15

<210> 203

<211> 16

<212> PRT

<213> Streptococcus agalactiae

<400> 203

Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln  
1 5 10 15

<210> 204

<211> 16

<212> PRT

<213> Streptococcus agalactiae

<400> 204

Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln  
1 5 10 15

<210> 205

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic  
peptide

<400> 205

Gly Leu Ser Gln Asn Arg Asp Val Arg Glu Asn Gln Arg Ala Arg Glu  
1 5 10 15

<210> 206

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic  
peptide

<400> 206

Ala Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln  
1 5 10 15

<210> 207

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 207

Gly	Ala	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5				10						15	

<210> 208

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 208

Gly	Asn	Ala	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5				10						15	

<210> 209

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 209

Gly	Asn	Val	Ala	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5				10						15	

<210> 210

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 210

Gly	Asn	Val	Leu	Ala	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5				10						15	

<210> 211

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 211

Gly	Asn	Val	Leu	Glu	Ala	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 212

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 212

Gly	Asn	Val	Leu	Glu	Arg	Ala	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 213

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 213

Gly	Asn	Val	Leu	Glu	Arg	Arg	Ala	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 214

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 214

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Ala	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 215

<211> 16

<212> PRT

<213> Artificial sequence



<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 215

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Ala	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 216

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 216

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 217

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 217

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Ala	Asn	Arg	Ser	Gln
1				5					10					15	

<210> 218

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 218

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Ala	Arg	Ser	Gln
1				5					10					15	

<210> 219

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 219

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Ala	Ser	Gln
1				5				10						15	

<210> 220

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 220

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ala	Gln
1				5				10						15	

<210> 221

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 221

Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Ala
1				5				10						15	

<210> 222

<211> 16

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<220>

<221> MOD\_RES

<222> (2)..(2)

<223> Asn, Ser or Thr

<220>

<221> MOD\_RES

<222> (5)..(5)

<223> Ala, Glu, Met or Gln

<220>  
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 <222> (8)..(8)  
 <223> Any amino acid

<220>  
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 <222> (9)..(9)  
 <223> Lys, Arg or Trp

<220>  
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 <222> (10)..(10)  
 <223> Ala, Asp, Glu, Asn or Gln

<220>  
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 <222> (11)..(11)  
 <223> Ala, Phe, Ile, Leu, Val or Tyr

<220>  
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 <222> (12)..(13)  
 <223> Any amino acid

<220>  
 <221> MOD\_RES  
 <222> (14)..(14)  
 <223> Lys or Arg

<220>  
 <221> MOD\_RES  
 <222> (15)..(16)  
 <223> Any amino acid

<400> 222  
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 1 5 10 15

<210> 223  
 <211> 28  
 <212> DNA  
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<220>  
 <223> Description of Artificial sequence: Synthetic  
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<400> 223  
 gtcctgtatc tgccatggat agtgttgg

28

<210> 224  
 <211> 29  
 <212> DNA  
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<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 224

ccgcgatcc acattttgat catcacctg

29

<210> 225

<211> 28

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 225

gtcctgtatc tgccatggat agtgttgg

28

<210> 226

<211> 27

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 226

ccgcgatcc cctataagtt gacctac

27

<210> 227

<211> 30

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 227

tgctttgccca tggtaggtca acttataggg

30

<210> 228

<211> 29

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 228

ccgcgatcc acattttgat catcacctg

29

<210> 229  
 <211> 29  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 229  
 gtgccttgcc atggaaagta ccgtaccgg

29

<210> 230  
 <211> 32  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 230  
 gcggacagct cgagtttccc acctgtcatc gg

32

<210> 231  
 <211> 33  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 231  
 gtgccttgcc atggacgacg taacaactga tac

33

<210> 232  
 <211> 31  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 232  
 gcggacagct cgagtgtacc aataccacct g

31

<210> 233  
 <211> 30  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 233

gtgccttgcc atgggccggg ataactaaag

30

<210> 234

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 234

gcggacagct cgagctcttt tatacgccat gag

33

<210> 235

<211> 30

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 235

ccgcgcatcc gatgataact ttgaaatgcc

30

<210> 236

<211> 30

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 236

tggcacaagc ttacattctg agcagaaagc

30

<210> 237

<211> 15

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 237  
aatatcgccc tgagc 15

<210> 238  
<211> 16  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: Synthetic  
primer

<400> 238  
ggttttccca gtcacg 16

<210> 239  
<211> 28  
<212> DNA  
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<220>  
<223> Description of Artificial sequence: Synthetic  
primer

<400> 239  
gtcctgtatc tgctatggat agtggttg 28

<210> 240  
<211> 19  
<212> DNA  
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<220>  
<223> Description of Artificial sequence: Synthetic  
primer

<400> 240  
acattttgat catcacctg 19

<210> 241  
<211> 19  
<212> DNA  
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<220>  
<223> Description of Artificial sequence: Synthetic  
primer

<400> 241  
actgctgagc taacaggtg 19

<210> 242  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 primer

<400> 242  
 acatcacctg acaatgtcgc 20

<210> 243  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 primer

<400> 243  
 gcgattgtga atagaatgag 20

<210> 244  
 <211> 19  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 primer

<400> 244  
 tatacaaagc ctgagcttc 19

<210> 245  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 primer

<400> 245  
 ttaccgtagc ctgtatcacc 20

<210> 246  
 <211> 18  
 <212> DNA  
 <213> Artificial sequence



<220>  
 <223> Description of Artificial sequence: Synthetic primer  
  
 <400> 246  
 cgacctacga tagcaacg 18  
  
 <210> 247  
 <211> 27  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> Description of Artificial sequence: Synthetic primer  
  
 <400> 247  
 ccgcggatcc gaatatgcta ccatcac 27  
  
 <210> 248  
 <211> 39  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> Description of Artificial sequence: Synthetic primer  
  
 <400> 248  
 cccatccact aaacttaaac attcctgatt tccaagttc 39  
  
 <210> 249  
 <211> 38  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> Description of Artificial sequence: Synthetic primer  
  
 <400> 249  
 tgtttaagtt tagtggatgg ggctgcggtt tgagacgc 38  
  
 <210> 250  
 <211> 30  
 <212> DNA  
 <213> Artificial sequence  
  
 <220>  
 <223> Description of Artificial sequence: Synthetic primer  
  
 <400> 250  
 tggcacaagc ttacctgct gagcgacttg 30

<210> 251  
 <211> 19  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 251  
 gttaaaggta acctgcctg

19

<210> 252  
 <211> 48  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 252  
 cccatccact aaacttaaac atacaactcc tattgtgccg aaatgtcg

48

<210> 253  
 <211> 42  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 253  
 tgtttaagtt tagtggatgg gcacttagag attttccaat cc

42

<210> 254  
 <211> 17  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 254  
 gacatcatag atccacc

17

<210> 255  
 <211> 29  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 255

ccgcgcatcc ggagctacgt ttgaacttc

29

<210> 256

<211> 39

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 256

cccatccact aaacttaaac aatattaccg cagcaccac

39

<210> 257

<211> 39

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 257

tgtttaagtt tagtggatgg gacaagaagg ccaagaagg

39

<210> 258

<211> 34

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 258

cacgcaacgc gtcgacgcac agctttaact gtac

34

<210> 259

<211> 5

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<220>  
 <221> MOD\_RES  
 <222> (3)..(3)  
 <223> Any amino acid

<400> 259  
 Leu Pro Xaa Thr Gly  
 1 5

<210> 260  
 <211> 6  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 6xHis tag

<400> 260  
 His His His His His His  
 1 5

<210> 261  
 <211> 36  
 <212> PRT  
 <213> Mus sp.

<400> 261  
 Arg Leu Ala Gly Leu Leu Arg Lys Gly Gly Glu Lys Ile Gly Glu Lys  
 1 5 10 15

Leu Lys Lys Ile Gly Gln Lys Ile Lys Asn Phe Phe Gln Lys Leu Val  
 20 25 30

Pro Gln Pro Glu  
 35

<210> 262  
 <211> 5  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 peptide

<400> 262  
 Leu Pro Lys Thr Gly  
 1 5

<210> 263  
 <211> 5  
 <212> PRT  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic peptide

<400> 263

Ile Pro Met Thr Gly  
1 5

<210> 264

<211> 5

<212> PRT

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: Synthetic primer

<400> 264

Ile Pro Gln Thr Gly  
1 5

<210> 265

<211> 2552

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (791)..(2116)

<400> 265

gatcattaaa taaatcaagg ttagttagct tgaaagatat aaatatattc caaaattcca	60
aaaagtaatt ggcatagtga caaaaactat tgctcccctg ctttagaaat aatttatattt	120
taattttaata ttaaaagtaa actgaagaat ctagtatat ttaaaaagta aagggtgcat	180
tttaactaaa ttatgttaaa ctactgttat gcgatgagtc gatatgtggt ttaccacta	240
ttgcgaggg agattataaa cgcaggagcg gatcttgata agttgtgtga accttcttgt	300
cacacttgaa aaggtgccct tagcttacta ctacttgtaa tttcttaca attgtggtaa	360
gtagctgaaa agcaaaaaag aaagaaccag tttggttctt tcttttttgc ataaataagt	420
cacaatttcc ttcttaaaat tatgtcttta cttaacttta attgaatatg ctaccatcac	480
attctttgta aaatttttaa ataatctagt ttctgatggt ttagatgaag tattaataat	540
atactattac ctcatgttaa atcttaatgt tagtatgact atctatcatg ctttataata	600
ttaaaggaaa atttaaaaat atcatgtttt agatatcaac tatttaattt taaacataca	660
aattaataat aaattgcaac taaataataa attatcttga cataacttat aaaatgtttt	720

aatatataat ctaaataaaaa gtaataataa aatgactttt aaaattttaa aaaagtaagg	780
agaaaattaa ttg ttc aat aaa ata ggt ttt aga act tgg aaa tca gga	829
Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly	
1 5 10	
aag ctt tgg ctt tat atg gga gtg cta gga tca act att att tta gga	877
Lys Leu Trp Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly	
15 20 25	
tca agt cct gta tct gct atg gat agt gtt gga aat caa agt cag ggc	925
Ser Ser Pro Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly	
30 35 40 45	
aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	973
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
50 55 60	
aat gtt cta gag cgt cgt caa cgc gat gtt gag aat aag agc caa ggc	1021
Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly	
65 70 75	
aat gtt tta gag cgt cgt caa cgt gat gcg gaa aac aag agc caa ggc	1069
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly	
80 85 90	
aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1117
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
95 100 105	
aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1165
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
110 115 120 125	
aat gtt cta gag cgt cgt caa cgc gat gca gaa aac aga agc caa ggt	1213
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
130 135 140	
aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggt	1261
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
145 150 155	
aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggt	1309
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
160 165 170	
aat gtt cta gag cgt cgt caa cgc gat gtt gag aat aag agc caa ggc	1357
Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly	
175 180 185	
aat gtt tta gag cgt cgt caa cgt gat gcg gaa aac aag agc caa ggc	1405
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly	
190 195 200 205	
aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1453
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
210 215 220	

aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1501
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
225 230 235	
aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1549
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
240 245 250	
aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1597
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
255 260 265	
aat gtt cta gag cgt cgt caa cgc gat gca gaa aac aga agc caa ggt	1645
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
270 275 280 285	
aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1693
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
290 295 300	
aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1741
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
305 310 315	
aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga agc caa ggc	1789
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly	
320 325 330	
aat gtt tta gag cgt cgt caa cgt gat gcg gaa aac aag agc caa gta	1837
Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Val	
335 340 345	
ggg caa ctt ata ggg aaa aat cca ctt ctt tca aag tca att ata tct	1885
Gly Gln Leu Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Ile Ile Ser	
350 355 360 365	
aga gaa aat aat cac tcg agt caa ggt gac tct aac aaa cag tca ttc	1933
Arg Glu Asn Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe	
370 375 380	
tct aaa aaa gta tct cag gtt act aat gta gct aat aga ccg atg tta	1981
Ser Lys Lys Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu	
385 390 395	
act aat aat tct aga aca att tca gtg ata aat aaa tta cct aaa aca	2029
Thr Asn Asn Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr	
400 405 410	
ggg gat gat caa aat gtc att ttt aaa ctt gta ggt ttt ggt tta att	2077
Gly Asp Asp Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile	
415 420 425	
ttg tta aca agt cgc tgc ggt ttg aga cgc aat gaa aat taagtataat	2126
Leu Leu Thr Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn	
430 435 440	
caatcattta gtaactatat ataatgatat atgcaatcaa taaaaaggaa tcggatacga	2186

gattcctttt tataattagg ttggttaggg tgactttttt catttggcta ttcttgaaag 2246  
 ttataaaaa tgtagttata atagtcacat taaaatgttt tgaaaatatt gatgaacaac 2306  
 atcaacaaat agaggtcatt atatgggata taccgttgct atcgtaggtg ctacaggtgc 2366  
 cgtaggaaca caaatgattc gtcaattaga acaatcgaat ttaccaatag aacaagtgaa 2426  
 acttttatca tcaagtcgct cagcaggtaa aattttacat tttaaagatg aggctatacg 2486  
 tgttgaagag acaacaaaag aatcatttta cgatgttgat attgccttgt tttcagctgg 2546  
 tggatc 2552

<210> 266

<211> 442

<212> PRT

<213> Streptococcus agalactiae

<400> 266

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
1 5 10 15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
20 25 30

Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
35 40 45

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
50 55 60

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
65 70 75 80

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
85 90 95

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
100 105 110

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
115 120 125

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
130 135 140

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
145 150 155 160

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
165 170 175

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
180 185 190



Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
                   195                                  200                                  205  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                   210                                  215                                  220  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 225                                  230                                  235                                  240  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   245                                  250                                  255  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   260                                  265                                  270  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   275                                  280                                  285  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   290                                  295                                  300  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 305                                  310                                  315                                  320  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                                   325                                  330                                  335  
 Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Val Gly Gln Leu  
                                   340                                  345                                  350  
 Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Ile Ile Ser Arg Glu Asn  
                   355                                  360                                  365  
 Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
                   370                                  375                                  380  
 Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
 385                                  390                                  395                                  400  
 Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
                                   405                                  410                                  415  
 Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
                                   420                                  425                                  430  
 Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
                   435                                  440

&lt;210&gt; 267

&lt;211&gt; 1820

&lt;212&gt; DNA

&lt;213&gt; Streptococcus agalactiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (383)..(1612)

<400> 267  
gcataaataa gtcacaattt ccttcttaaa attatgtctt tacttaactt taattgaata 60  
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agtattaaaa atatactatt acctcattgt aaatcttaat gtttagtatga ctatctatca 180  
tgctttataa tattaaagga aaatttaaaa atatcatggt ttagatatca actatttaat 240  
tttaaacata caaattaata ataaattgca actaaataat aaattatctt gacataactt 300  
ataaaatggt ttaatatata atctaaataa aagtaataat aaaatgactt ttaaaattta 360  
aaaaaagtaa ggagaaaatt aa ttg ttc aat aaa ata ggt ttt aga act tgg 412  
Met Phe Asn Lys Ile Gly Phe Arg Thr Trp  
1 5 10  
aaa tca gga aag ctt tgg ctt tat atg gga gtg cta gga tca act att 460  
Lys Ser Gly Lys Leu Trp Leu Tyr Met Gly Val Leu Gly Ser Thr Ile  
15 20 25  
att tta gga tca agt tct gta tct gct atg gat agt gtt gga aat caa 508  
Ile Leu Gly Ser Ser Ser Val Ser Ala Met Asp Ser Val Gly Asn Gln  
30 35 40  
agt cag ggc aat gtt tta gag cgt cgt caa cgc gat gca gaa aac aga 556  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
45 50 55  
agc caa ggc aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga 604  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
60 65 70  
agc caa ggc aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga 652  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
75 80 85 90  
agc caa ggt aat gtt cta gag cgt cgt caa cgc gat gtt gaa aat aaa 700  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys  
95 100 105  
agc caa ggc aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga 748  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
110 115 120  
agc caa ggt aat gtt cta gag cgt cgt caa cgc gat gtt gaa aat aaa 796  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys  
125 130 135  
agc caa ggc aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga 844  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
140 145 150  
agc caa ggt aat gtt cta gag cgt cgt caa cgt gat gca gaa aac aga 892  
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
155 160 165 170

agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgc	gat	gca	gaa	aac	aga	940
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	
				175					180					185		
agc	caa	ggc	aat	gtt	cta	gag	cgt	cgt	caa	cgt	gat	gct	gaa	aac	aaa	988
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	
			190					195					200			
agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgt	gat	gca	gaa	aac	aga	1036
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	
		205					210					215				
agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgt	gat	gct	gaa	aac	aga	1084
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	
		220				225					230					
agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgc	gat	gca	gaa	aac	aga	1132
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	
		235			240					245					250	
agc	caa	ggc	aat	gtt	cta	gag	cgt	cgt	caa	cgt	gat	gca	gaa	aac	aag	1180
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	
			255						260					265		
agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgt	gat	gca	gaa	aac	aga	1228
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	
			270					275					280			
agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgc	gat	gtt	gag	aat	aag	1276
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	
		285					290					295				
agc	caa	ggc	aat	gtt	tta	gag	cgt	cgt	caa	cgt	gat	gca	gaa	aac	aag	1324
Ser	Gln	Gly	Asn	Val	Leu	Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	
		300				305					310					
agc	caa	gta	ggc	caa	ctt	ata	ggg	aaa	aat	cca	ctt	ctt	tca	aag	tca	1372
Ser	Gln	Val	Gly	Gln	Leu	Ile	Gly	Lys	Asn	Pro	Leu	Leu	Ser	Lys	Ser	
		315			320					325					330	
att	ata	tct	aga	gaa	aat	aat	cac	tct	agt	caa	ggc	gac	tct	aac	aaa	1420
Ile	Ile	Ser	Arg	Glu	Asn	Asn	His	Ser	Ser	Gln	Gly	Asp	Ser	Asn	Lys	
			335					340						345		
cag	tca	ttc	tct	aaa	aaa	gta	tct	cag	gtt	act	aat	gta	gct	aat	aga	1468
Gln	Ser	Phe	Ser	Lys	Lys	Val	Ser	Gln	Val	Thr	Asn	Val	Ala	Asn	Arg	
			350					355					360			
ccg	atg	tta	act	aat	aat	tct	aga	aca	att	tca	gtg	ata	aat	aaa	tta	1516
Pro	Met	Leu	Thr	Asn	Asn	Ser	Arg	Thr	Ile	Ser	Val	Ile	Asn	Lys	Leu	
		365					370					375				
cct	aaa	aca	ggc	gat	gat	caa	aat	gtc	att	ttt	aaa	ctt	gta	ggc	ttt	1564
Pro	Lys	Thr	Gly	Asp	Asp	Gln	Asn	Val	Ile	Phe	Lys	Leu	Val	Gly	Phe	
		380				385					390					

ggt tta att ttg tta aca agt cgc tgc ggt ttg aga cgc aat gaa aat 1612  
 Gly Leu Ile Leu Leu Thr Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
 395 400 405 410

taagtataat caatcattta gtaactatat ataatgatat atgcaatcaa taaaaaggaa 1672

tcggatacga gattcctttt tataattagg ttggttaggg tgactttttt catttggcta 1732

ttcttgaaag ttataaaaa tgtagtataa tagtcacatt aaaatgtttt gaaaatattg 1792

atgaacaaca tcaacaaata gaggtcat 1820

<210> 268

<211> 410

<212> PRT

<213> Streptococcus agalactiae

<400> 268

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
 1 5 10 15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Ser  
 20 25 30

Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
 35 40 45

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 50 55 60

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 65 70 75 80

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 85 90 95

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 100 105 110

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 115 120 125

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
 130 135 140

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 145 150 155 160

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 165 170 175

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 180 185 190

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
 195 200 205

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
210 215 220

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
225 230 235 240

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
245 250 255

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu  
260 265 270

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
275 280 285

Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu  
290 295 300

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Val Gly Gln Leu  
305 310 315 320

Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Ile Ile Ser Arg Glu Asn  
325 330 335

Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
340 345 350

Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
355 360 365

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
370 375 380

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
385 390 395 400

Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
405 410

<210> 269

<211> 1628

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (385)..(1422)

<400> 269

gcataaataa gtcacaattt ccttctaaaa attatgtctt tacttaactt taattgaata 60

tgctaccatc acattctttg taaaattttt aaataatcta gtttctgatg gtttagatga 120

agtattaaaa atatactatt atctcattgt aaatccta gtttagtatga ctatctatca 180

tgttttataa tattgaagga aaatttataa atatcatggt ttagatatca actatttaat 240

tttaaacata caaattaata ataaattgca attaaataac aaattacctt gacataaatt	300
ataaaatgtt ttaatatata taatctaaat aaaaataata ataaaatgac ttttaaatt	360
taaaaaaagt aaggagaaaa ttaa ttg ttc aat aaa ata ggt ttt aga act	411
Met Phe Asn Lys Ile Gly Phe Arg Thr	
1 5	
tgg aaa tca gga aag ctt tgg ctt tat atg gga gtg cta gga tca act	459
Trp Lys Ser Gly Lys Leu Trp Leu Tyr Met Gly Val Leu Gly Ser Thr	
10 15 20 25	
att att tta gga tca agt cct gta tct gct atg gat agt gtt gga aat	507
Ile Ile Leu Gly Ser Ser Pro Val Ser Ala Met Asp Ser Val Gly Asn	
30 35 40	
caa agt caa ggt aat gtt cta gag cgt cgt caa cgt gat gcg gat aac	555
Gln Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn	
45 50 55	
aag agc caa ggc aat gtt cta gaa cgt cgt caa cgc gat gta gaa aac	603
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn	
60 65 70	
aga agc caa ggc aat gtt cta gag cgt cgt caa cgc gat gcg gat aac	651
Arg Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn	
75 80 85	
aag agc caa ggc aat gtt tta gag cgc cgc caa cgc gat gca gaa aac	699
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn	
90 95 100 105	
aaa agt cag ggc aat gtt cta gaa cgt cgt caa cgt gat gtt gag aat	747
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn	
110 115 120	
aag agc caa ggc aat gtt cta gag cgt cgc caa cgt gat gca gaa aac	795
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn	
125 130 135	
aaa agt cag ggt aat gtt cta gag cgt cgt caa cgc gat gca gat aac	843
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn	
140 145 150	
aag agc caa ggt aat gtt cta gaa cgt cgt caa cgc gat gtg gaa aac	891
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn	
155 160 165	
aaa agt cag ggc aat gtt cta gaa cgt cgt caa cgt gat gtt gag aat	939
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn	
170 175 180 185	
aag agc caa ggc aat gtt cta gag cgt cgc caa cgt gat gca gaa aac	987
Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn	
190 195 200	

aaa agt cag ggt aat gtt cta gag cgt cgt caa cgc gat gca gat aac 1035  
 Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn  
 205 210 215

aag agc caa ggt aat gtt cta gaa cgt cgt caa cgc gat gtg gaa aac 1083  
 Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn  
 220 225 230

aaa agt cag ggc aat gtt cta gag cgt cgc caa cgt gat gtt gag aac 1131  
 Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn  
 235 240 245

aag agc caa gta ggt caa ctt ata ggg aaa aat cca ctt ctt tca aag 1179  
 Lys Ser Gln Val Gly Gln Leu Ile Gly Lys Asn Pro Leu Leu Ser Lys  
 250 255 260 265

tca act ata tct aga gaa aat aat cac tct agt caa ggt gac tct aac 1227  
 Ser Thr Ile Ser Arg Glu Asn Asn His Ser Ser Gln Gly Asp Ser Asn  
 270 275 280

aaa cag tca ttc tct aaa aaa gta tct cag gtt act aat gta gct aat 1275  
 Lys Gln Ser Phe Ser Lys Lys Val Ser Gln Val Thr Asn Val Ala Asn  
 285 290 295

aga cca atg tta act aat aat tct aga aca att tca gtg ata aat aaa 1323  
 Arg Pro Met Leu Thr Asn Asn Ser Arg Thr Ile Ser Val Ile Asn Lys  
 300 305 310

tta cct aaa aca ggt gat gat caa aat gtc att ttt aaa ctt gta ggt 1371  
 Leu Pro Lys Thr Gly Asp Asp Gln Asn Val Ile Phe Lys Leu Val Gly  
 315 320 325

ttt ggt tta att ttg tta aca agt cgc tgc ggt ttg aga cgc aat gaa 1419  
 Phe Gly Leu Ile Leu Leu Thr Ser Arg Cys Gly Leu Arg Arg Asn Glu  
 330 335 340 345

aat taagtataat caatcattta gtaactatta taatgatata tgcaatcaat 1472  
 Asn

aaaaaggaat cggatacaag attccttttt ataattaggt tggtaggggt gactttttca 1532

tttggctatt cttgaaagtt tataaaaatg tagtataata gtcacattaa aatgttttga 1592

aaatattgat gaacaacatc aacaaataga ggtcat 1628

&lt;210&gt; 270

&lt;211&gt; 346

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 270

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
 1 5 10 15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
 20 25 30

Val	Ser	Ala	Met	Asp	Ser	Val	Gly	Asn	Gln	Ser	Gln	Gly	Asn	Val	Leu	35	40	45
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	50	55	60
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu	65	70	75
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	85	90	95
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	100	105	110
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	115	120	125
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	130	135	140
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	145	150	155
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	165	170	175
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	180	185	190
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	195	200	205
Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	210	215	220
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu	225	230	235
Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Val	Gly	Gln	Leu	245	250	255
Ile	Gly	Lys	Asn	Pro	Leu	Leu	Ser	Lys	Ser	Thr	Ile	Ser	Arg	Glu	Asn	260	265	270
Asn	His	Ser	Ser	Gln	Gly	Asp	Ser	Asn	Lys	Gln	Ser	Phe	Ser	Lys	Lys	275	280	285
Val	Ser	Gln	Val	Thr	Asn	Val	Ala	Asn	Arg	Pro	Met	Leu	Thr	Asn	Asn	290	295	300
Ser	Arg	Thr	Ile	Ser	Val	Ile	Asn	Lys	Leu	Pro	Lys	Thr	Gly	Asp	Asp	305	310	315
Gln	Asn	Val	Ile	Phe	Lys	Leu	Val	Gly	Phe	Gly	Leu	Ile	Leu	Leu	Thr	325	330	335



Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
 340 345

<210> 271  
 <211> 1150  
 <212> DNA  
 <213> Streptococcus agalactiae

<220>  
 <221> CDS  
 <222> (385)..(942)

<400> 271  
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 tatgctacca tcacattcctt tgtaaaattt ttaaataatc tagtttctga tggtttagat 120  
 gaagtattaa aaatatacta ttacctcatt gtaaattctta atgttagtat gactatctat 180  
 catgctttat aatattaaag gaaaatttaa aaatatcatg ttttagatat caactattta 240  
 attttaaaca taaaaattaa taataaattg caactaaata ataaattatc ttgacataac 300  
 ttataaaatg ttttaatatata taatctaaat aaaagtaata ataaaatgac ttttaaaatt 360  
 taaaaaaagt aaggagaaaa ttaa ttg ttc aat aaa ata ggt ttt aga act 411  
 Met Phe Asn Lys Ile Gly Phe Arg Thr  
 1 5  
 tgg aaa tca gga aag ctt tgg ctt tat atg gga gtg cta gga tca act 459  
 Trp Lys Ser Gly Lys Leu Trp Leu Tyr Met Gly Val Leu Gly Ser Thr  
 10 15 20 25  
 att att tta gga tca agt cct gta tct gct atg gat agt gtt gga aat 507  
 Ile Ile Leu Gly Ser Ser Pro Val Ser Ala Met Asp Ser Val Gly Asn  
 30 35 40  
 caa agt cag ggc aat gtt tta gag cgt cgt caa cgc gat gca gaa aac 555  
 Gln Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn  
 45 50 55  
 aga agc caa ggt aat gtt cta gag cgt cgt caa cgc gat gca gaa aac 603  
 Arg Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn  
 60 65 70  
 aga agc caa ggt aat gtt cta gag cgt cgt caa cgt gat gcg gaa aac 651  
 Arg Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn  
 75 80 85  
 aag agc caa gta ggt caa ctt ata ggg aaa aat cca ctt ctt tca aag 699  
 Lys Ser Gln Val Gly Gln Leu Ile Gly Lys Asn Pro Leu Leu Ser Lys  
 90 95 100 105  
 tca att ata tct aga gaa aat aat cac tct agt caa ggt gac tct aac 747  
 Ser Ile Ile Ser Arg Glu Asn Asn His Ser Ser Gln Gly Asp Ser Asn  
 110 115 120

aaa cag tca ttc tct aaa aaa gta tct cag gtt act aat gta gct aat 795  
 Lys Gln Ser Phe Ser Lys Lys Val Ser Gln Val Thr Asn Val Ala Asn  
                   125                                  130                                  135

aga ccg atg tta act aat aat tct aga aca att tca gtg ata aat aaa 843  
 Arg Pro Met Leu Thr Asn Asn Ser Arg Thr Ile Ser Val Ile Asn Lys  
                   140                                  145                                  150

tta cct aaa aca ggt gat gat caa aat gtc att ttt aaa ctt gta ggt 891  
 Leu Pro Lys Thr Gly Asp Asp Gln Asn Val Ile Phe Lys Leu Val Gly  
                   155                                  160                                  165

ttt ggt tta att ttg tta aca agt cgc tgc ggt ttg aga cgc aat gaa 939  
 Phe Gly Leu Ile Leu Leu Thr Ser Arg Cys Gly Leu Arg Arg Asn Glu  
 170                                  175                                  180                                  185

aat taagtataat caatcattta gtaactatat ataatgatat atgcaatcaa 992  
 Asn

taaaaaggaa tcggatacga gattcctttt tataattagg ttggttaggg tgactttttt 1052

catttggtcta ttcttgaaag tttataaaaa tgtagtataa tagtcacatt aaaatgtttt 1112

gaaaatattg atgaacaaca tcaapaaata gaggtcat 1150

<210> 272

<211> 186

<212> PRT

<213> Streptococcus agalactiae

<400> 272

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp  
 1                                  5                                  10                                  15

Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro  
                   20                                  25                                  30

Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
                   35                                  40                                  45

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
                   50                                  55                                  60

Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg Ser Gln Gly Asn Val Leu  
 65                                  70                                  75                                  80

Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Val Gly Gln Leu  
                   85                                  90                                  95

Ile Gly Lys Asn Pro Leu Leu Ser Lys Ser Ile Ile Ser Arg Glu Asn  
                   100                                  105                                  110

Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
                   115                                  120                                  125

Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
 130 135 140

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
 145 150 155 160

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
 165 170 175

Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
 180 185

&lt;210&gt; 273

&lt;211&gt; 1484

&lt;212&gt; DNA

&lt;213&gt; Streptococcus agalactiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (383)..(1276)

&lt;400&gt; 273

gcataaataa gtcacaattt ccttcttaaa attatgtctt tacttaactt taattgaata 60

tgctaccatc acattctttg taaaattttt aaataatcta gtttctgatg gtttagatga 120

agtattaaaa atatactatt acctcattgt aaatcttaat gtttagtatga ctatctatca 180

tgctttataa tattaaagga aaattttaaaa atatcatgtt ttagatatca actattttaat 240

tttaaacata caaattaata ataaattgca actaaataat aaattatctt gacataactt 300

ataaaatggtt ttaatataata atctaaataa aagtaataat aaaatgactt ttaaaattta 360

aaaaaagtaa ggagaaaatt aa ttg ttc aat aaa ata ggt ttt aga act tgg 412  
 Met Phe Asn Lys Ile Gly Phe Arg Thr Trp  
 1 5 10

aaa tca gga aag ctt tgg ctt tat atg gga gtg cta gga tca act att 460  
 Lys Ser Gly Lys Leu Trp Leu Tyr Met Gly Val Leu Gly Ser Thr Ile  
 15 20 25

att tta gga tca agt cct gta tct gct atg gat agt gtt gga aat caa 508  
 Ile Leu Gly Ser Ser Pro Val Ser Ala Met Asp Ser Val Gly Asn Gln  
 30 35 40

agc caa ggc aat gtt cta gag cgt cgt caa cgc gat gca gaa aac aga 556  
 Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg  
 45 50 55

agc caa ggt aat gtt tta gaa cgt cgt caa cgc gat gtt gag aac aag 604  
 Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys  
 60 65 70

agc caa ggt aat gtt tta gag cgt cgc caa cgt gat gcg gaa aac aaa 652  
 Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys  
 75 80 85 90

agt cag ggc aat gtt tta gag cgt cgt caa cgt gat gca gaa aac aga	700
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg	
95 100 105	
agc caa ggt aat gtt cta gag cgt cgt caa cgc gat gtt gag aat aag	748
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys	
110 115 120	
agc caa ggc aat gtt cta gag cgt cgt caa cgc gat gtt gag aat aag	796
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys	
125 130 135	
agc caa ggt aat gtt cta gag cgt cgt caa cgc gat gtt gag aat aag	844
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Val Glu Asn Lys	
140 145 150	
agc caa ggt aat gtt cta gag cgt cgt caa cgt gat gcg gaa aac aag	892
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys	
155 160 165 170	
agc caa ggc aat gtt cta gag cgt cgt caa cgc gat gca gaa aac aga	940
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Glu Asn Arg	
175 180 185	
agc caa ggt aat gtt tta gag cgt cgc caa cat gat gtt gag aat aag	988
Ser Gln Gly Asn Val Leu Glu Arg Arg Gln His Asp Val Glu Asn Lys	
190 195 200	
agt caa gta ggt caa ctt ata ggg aaa aat cca ctt ttt tca aag tca	1036
Ser Gln Val Gly Gln Leu Ile Gly Lys Asn Pro Leu Phe Ser Lys Ser	
205 210 215	
act gta tct aga gaa aat aat cac tct agt caa ggt gac tct aac aaa	1084
Thr Val Ser Arg Glu Asn Asn His Ser Ser Gln Gly Asp Ser Asn Lys	
220 225 230	
cag tca ttc tct aaa aaa gta tct cag gtt act aat gta gct aat aga	1132
Gln Ser Phe Ser Lys Lys Val Ser Gln Val Thr Asn Val Ala Asn Arg	
235 240 245 250	
ccg atg tta act aat aat tct aga aca att tca gtg ata aat aaa tta	1180
Pro Met Leu Thr Asn Asn Ser Arg Thr Ile Ser Val Ile Asn Lys Leu	
255 260 265	
cct aaa aca ggt gat gat caa aat gtc att ttt aaa ctt gta ggt ttt	1228
Pro Lys Thr Gly Asp Asp Gln Asn Val Ile Phe Lys Leu Val Gly Phe	
270 275 280	
ggg tta att tta tta aca agt ctc tgc ggt ttg aga cgc aat gaa aat	1276
Gly Leu Ile Leu Leu Thr Ser Leu Cys Gly Leu Arg Arg Asn Glu Asn	
285 290 295	
taagtataat caaccattta gtaactatta taatgatata tgcaatcaat aaaaaaggaa	1336
tcgaatacga gattcctttt tataattagg ttggttaggg tgactttttt catttggtcta	1396
ttcttgaaag tttataaaaa tgtagtataa tagtcacatt aaaatgtttt gaaaatattg	1456

atgaacaaca tcatacaata gaggtcat

1484

&lt;210&gt; 274

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 274

Met	Phe	Asn	Lys	Ile	Gly	Phe	Arg	Thr	Trp	Lys	Ser	Gly	Lys	Leu	Trp
1				5					10					15	

Leu	Tyr	Met	Gly	Val	Leu	Gly	Ser	Thr	Ile	Ile	Leu	Gly	Ser	Ser	Pro
			20					25					30		

Val	Ser	Ala	Met	Asp	Ser	Val	Gly	Asn	Gln	Ser	Gln	Gly	Asn	Val	Leu
		35					40					45			

Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu
	50					55					60				

Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
65					70					75					80

Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			85						90					95	

Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu
			100					105					110		

Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			115					120					125		

Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
	130					135					140				

Glu	Arg	Arg	Gln	Arg	Asp	Val	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
145					150					155					160

Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
			165						170					175	

Glu	Arg	Arg	Gln	Arg	Asp	Ala	Glu	Asn	Arg	Ser	Gln	Gly	Asn	Val	Leu
			180					185					190		

Glu	Arg	Arg	Gln	His	Asp	Val	Glu	Asn	Lys	Ser	Gln	Val	Gly	Gln	Leu
	195						200					205			

Ile	Gly	Lys	Asn	Pro	Leu	Phe	Ser	Lys	Ser	Thr	Val	Ser	Arg	Glu	Asn
	210					215								220	

Asn	His	Ser	Ser	Gln	Gly	Asp	Ser	Asn	Lys	Gln	Ser	Phe	Ser	Lys	Lys
225					230					235					240

Val	Ser	Gln	Val	Thr	Asn	Val	Ala	Asn	Arg	Pro	Met	Leu	Thr	Asn	Asn
			245						250					255	

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Asp Asp  
                   260                  265                  270

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
                   275                  280                  285

Ser Leu Cys Gly Leu Arg Arg Asn Glu Asn  
           290                  295

<210> 275  
 <211> 2446  
 <212> DNA  
 <213> Streptococcus agalactiae

<220>  
 <221> CDS  
 <222> (385)..(2238)

<400> 275  
 gcataaataa gtcacaattt ccttctaaaa attatgtctt tacttaactt taattgaata 60  
 tgctaccatc acattctttg taaaattttt aaataaccta gtttctgatg gtttagatga 120  
 agtattaaaa atatactatt atctcattgt aaatccta atgtagtatga ctatctatca 180  
 tgttttataa tattgaagga aaatttataa atatcatggt ttagatatca actatttaatt 240  
 tttaaacata caaattaata ataaattgca attaaataac aaattacctt gacataaatt 300  
 ataaaatgat ttaatatata taatctaaat aaaaataata ataaaatgac ttttaaaatt 360  
 taaaaaaagt aaggagaaaa ttaa ttg ttc aat aaa ata ggt ttt aga act 411  
                                   Met Phe Asn Lys Ile Gly Phe Arg Thr  
                                   1                  5  
 tgg aaa tca gga aag ctt tgg ctt tat atg gga gtg cta gga tca act 459  
 Trp Lys Ser Gly Lys Leu Trp Leu Tyr Met Gly Val Leu Gly Ser Thr  
 10                  15                  20                  25  
 att att tta gga tca agt cct gta tct gct atg gat agt gtt gga aat 507  
 Ile Ile Leu Gly Ser Ser Pro Val Ser Ala Met Asp Ser Val Gly Asn  
                   30                  35                  40  
 caa agt caa ggt aat gtt cta gag cgt cgc caa cgt gat gcg gat aac 555  
 Gln Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn  
                   45                  50                  55  
 aag agc caa ggt aat gtt tta gag cgt cgc caa cgt gat gca gat aac 603  
 Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn  
                   60                  65                  70  
 aaa agt cag ggc aat gtt cta gaa cgt cgc caa cgt gat gtt gat aac 651  
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Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn	
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Lys Ser Gln Gly Asn Val Leu Glu Arg Arg Gln Arg Asp Ala Asp Asn	
315 320 325	
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 555 560 565

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 570 575 580 585

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 Leu Pro Lys Thr Gly Asp Asp Gln Asn Val Ile Phe Lys Leu Val Gly  
 590 595 600

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 Phe Gly Leu Ile Leu Leu Thr Ser Leu Cys Gly Leu Arg Arg Asn Glu  
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<211> 618

<212> PRT

<213> Streptococcus agalactiae

<400> 276

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Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu  
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 65 70 75 80

Glu Arg Arg Gln Arg Asp Val Asp Asn Lys Ser Gln Gly Asn Val Leu  
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Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
 100 105 110

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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Val	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Val	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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Glu	Arg	Arg	Gln	Arg	Asp	Ala	Asp	Asn	Lys	Ser	Gln	Gly	Asn	Val	Leu
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 Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
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 Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
                   450                  455                  460  
 Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Gly Asn Val Leu  
                   465                  470                  475                  480  
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 Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
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                   580                  585                  590  
 Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
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&lt;221&gt; CDS

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Met Arg Lys Tyr Gln Lys Phe Ser Lys Ile Leu	
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Thr Leu Ser Leu Phe Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val	
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Leu Gly Glu Ser Thr Val Pro Glu Asn Gly Ala Lys Gly Lys Leu Val	
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Val Lys Lys Thr Asp Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe	
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Val Leu Lys Thr Thr Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr	
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Tyr Thr Leu Ser Glu Glu Thr Ala Pro Glu Gly Tyr Lys Lys Thr Asn	
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Gln Thr Trp Gln Val Lys Val Glu Ser Asn Gly Lys Thr Thr Ile Gln	
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Asn Ser Gly Asp Lys Asn Ser Thr Ile Gly Gln Asn His Glu Glu Leu	
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Asp Lys Gln Tyr Pro Pro Thr Gly Ile Tyr Glu Asp Thr Lys Glu Ser	
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Tyr Lys Leu Glu His Val Lys Gly Ser Val Pro Asn Gly Lys Ser Glu	
160 165 170	
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Ala Lys Ala Val Asn Pro Tyr Ser Ser Glu Gly Glu His Ile Arg Glu	
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Ile Pro Glu Gly Thr Leu Ser Lys Arg Ile Ser Glu Val Gly Asp Leu	
190 195 200	

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Ala His Asn Lys Tyr Lys Ile Glu Leu Thr Val Ser Gly Lys Thr Ile	
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Ser Asp Ile Phe Asp Gly Arg Ser Val Asp Val Val Lys Gly Phe Lys	
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Ile Ser Gly Asn Leu Gln Lys Leu His Tyr Leu Asp Leu Asn Leu Asn	
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Tyr Pro Lys Gly Thr Ile Tyr Arg Asn Gly Pro Val Arg Glu His Gly	
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Phe Ser Ser Lys Pro Glu Tyr Tyr Thr Pro Ile Val Thr Ser Ser Asp	
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Leu	Gly	Glu	Gly	Gln	Lys	Val	Thr	Leu	Thr	Tyr	Asp	Val	Lys	Leu	Asp	
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700					705					710					715	
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Pro	Lys	Ile	Arg	Asp	Val	Arg	Glu	Tyr	Pro	Thr	Ile	Thr	Ile	Lys	Asn	
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Glu	Asp	Tyr	Lys	Leu	Tyr	Leu	Pro	Ile	Lys	Asn	Asn	Asn	Ser	Lys	Val	
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Lys	Tyr	Gln	Leu	Ile	Glu	Ala	Val	Ser	Pro	Lys	Asp	Tyr	Gln	Lys	Ile	
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Thr	Asn	Lys	Pro	Ile	Leu	Thr	Phe	Glu	Val	Val	Lys	Gly	Ser	Ile	Gln	
			815					820					825			
aat	ata	ata	gct	gtt	aat	aaa	cag	att	tct	gaa	tat	cat	gag	gaa	ggt	2787
Asn	Ile	Ile	Ala	Val	Asn	Lys	Gln	Ile	Ser	Glu	Tyr	His	Glu	Glu	Gly	
		830					835					840				
gac	aag	cat	tta	att	acc	aac	acg	cat	att	cca	cca	aaa	gga	att	att	2835
Asp	Lys	His	Leu	Ile	Thr	Asn	Thr	His	Ile	Pro	Pro	Lys	Gly	Ile	Ile	
	845					850					855					
ccg	atg	aca	ggt	ggg	aaa	gga	att	cta	tct	ttc	att	tta	ata	ggt	gga	2883
Pro	Met	Thr	Gly	Gly	Lys	Gly	Ile	Leu	Ser	Phe	Ile	Leu	Ile	Gly	Gly	
860					865					870					875	

tct atg atg tct att gca ggt gga att tat att tgg aaa aga tat aag	2931
Ser Met Met Ser Ile Ala Gly Gly Ile Tyr Ile Trp Lys Arg Tyr Lys	
880 885 890	
aaa tct agt gat ata tct aga gaa aaa gat taagaatcat gtgttttagt	2981
Lys Ser Ser Asp Ile Ser Arg Glu Lys Asp	
895 900	
attcttaatt aattaaatat aattcgaaag gagtgggtgct gcggtaatat tataatccgt	3041
atattattat ctatgttgat taactagaat aagaaggaga tagaa atg aaa aaa atc	3098
Met Lys Lys Ile	
905	
aac aaa tgt ctt aca gtg ttc tcg aca ctg cta ttg atc tta acg tca	3146
Asn Lys Cys Leu Thr Val Phe Ser Thr Leu Leu Leu Ile Leu Thr Ser	
910 915 920	
cta ttc tca gtt gca cca gcg ttt gcg gac gac gta aca act gat act	3194
Leu Phe Ser Val Ala Pro Ala Phe Ala Asp Asp Val Thr Thr Asp Thr	
925 930 935	
gtg acc ttg cac aag att gtc atg cca caa gct gca ttt gat aac ttt	3242
Val Thr Leu His Lys Ile Val Met Pro Gln Ala Ala Phe Asp Asn Phe	
940 945 950	
act gaa ggt aca aaa ggt aag aat gat agc gat tat gtt ggt aaa caa	3290
Thr Glu Gly Thr Lys Gly Lys Asn Asp Ser Asp Tyr Val Gly Lys Gln	
955 960 965	
att aat gac ctt aaa tct tat ttt ggc tca acc gat gct aaa gaa att	3338
Ile Asn Asp Leu Lys Ser Tyr Phe Gly Ser Thr Asp Ala Lys Glu Ile	
970 975 980 985	
aag ggt gct ttc ttt gtt ttc aaa aat gaa act ggt aca aaa ttc att	3386
Lys Gly Ala Phe Phe Val Phe Lys Asn Glu Thr Gly Thr Lys Phe Ile	
990 995 1000	
act gaa aat ggt aag gaa gtc gat act ttg gaa gct aaa gat gct	3431
Thr Glu Asn Gly Lys Glu Val Asp Thr Leu Glu Ala Lys Asp Ala	
1005 1010 1015	
gaa ggt ggt gct gtt ctt tca ggg tta aca aaa gac act ggt ttt	3476
Glu Gly Gly Ala Val Leu Ser Gly Leu Thr Lys Asp Thr Gly Phe	
1020 1025 1030	
gct ttt aac act gct aag tta aaa gga act tac caa atc gtt gaa	3521
Ala Phe Asn Thr Ala Lys Leu Lys Gly Thr Tyr Gln Ile Val Glu	
1035 1040 1045	
ttg aaa gaa aaa tca aac tac gat aac aac ggt tct atc ttg gct	3566
Leu Lys Glu Lys Ser Asn Tyr Asp Asn Asn Gly Ser Ile Leu Ala	
1050 1055 1060	
gat tca aaa gca gtt cca gtt aaa atc act ctg cca ttg gta aac	3611
Asp Ser Lys Ala Val Pro Val Lys Ile Thr Leu Pro Leu Val Asn	
1065 1070 1075	



aac caa ggt gtt gtt aaa gat gct cac att tat cca aag aat act	3656
Asn Gln Gly Val Val Lys Asp Ala His Ile Tyr Pro Lys Asn Thr	
1080 1085 1090	
gaa aca aaa cca caa gta gat aag aac ttt gca gat aaa gat ctt	3701
Glu Thr Lys Pro Gln Val Asp Lys Asn Phe Ala Asp Lys Asp Leu	
1095 1100 1105	
gat tat act gac aac cga aaa gac aaa ggt gtt gtc tca gcg aca	3746
Asp Tyr Thr Asp Asn Arg Lys Asp Lys Gly Val Val Ser Ala Thr	
1110 1115 1120	
gtt ggt gac aaa aaa gaa tac ata gtt gga aca aaa att ctt aaa	3791
Val Gly Asp Lys Lys Glu Tyr Ile Val Gly Thr Lys Ile Leu Lys	
1125 1130 1135	
ggc tca gac tat aag aaa ctg gtt tgg act gat agc atg act aaa	3836
Gly Ser Asp Tyr Lys Lys Leu Val Trp Thr Asp Ser Met Thr Lys	
1140 1145 1150	
ggt ttg acg ttc aac aac aac gtt aaa gta aca ttg gat ggt aaa	3881
Gly Leu Thr Phe Asn Asn Asn Val Lys Val Thr Leu Asp Gly Lys	
1155 1160 1165	
gat ttt cct gtt tta aac tac aaa ctc gta aca gat gac caa ggt	3926
Asp Phe Pro Val Leu Asn Tyr Lys Leu Val Thr Asp Asp Gln Gly	
1170 1175 1180	
ttc cgt ctt gcc ttg aat gca aca ggt ctt gca gca gta gca gct	3971
Phe Arg Leu Ala Leu Asn Ala Thr Gly Leu Ala Ala Val Ala Ala	
1185 1190 1195	
gct gca aaa gac aaa gat gtt gaa atc aag atc act tac tca gct	4016
Ala Ala Lys Asp Lys Asp Val Glu Ile Lys Ile Thr Tyr Ser Ala	
1200 1205 1210	
acg gtg aac ggc tcc act act gtt gaa gtt cca gaa acc aat gat	4061
Thr Val Asn Gly Ser Thr Thr Val Glu Val Pro Glu Thr Asn Asp	
1215 1220 1225	
gtt aaa ttg gac tat ggt aat aac cca acg gaa gaa agt gaa cca	4106
Val Lys Leu Asp Tyr Gly Asn Asn Pro Thr Glu Glu Ser Glu Pro	
1230 1235 1240	
caa gaa ggt act cca gct aac caa gaa att aaa gtc att aaa gac	4151
Gln Glu Gly Thr Pro Ala Asn Gln Glu Ile Lys Val Ile Lys Asp	
1245 1250 1255	
tgg gca gta gat ggt aca att act gat gtt aat gtt gca gtt aaa	4196
Trp Ala Val Asp Gly Thr Ile Thr Asp Val Asn Val Ala Val Lys	
1260 1265 1270	
gct atc ttt acc ttg caa gaa aaa caa acg gat ggt aca tgg gtg	4241
Ala Ile Phe Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp Val	
1275 1280 1285	

aac gtt gct tca	cac gaa gca aca	aaa cca tca cgc ttt	gaa cat	4286
Asn Val Ala Ser	His Glu Ala Thr	Lys Pro Ser Arg Phe	Glu His	
1290	1295	1300		
act ttc aca ggt	ttg gat aat act	aaa act tac cgc gtt	gtc gaa	4331
Thr Phe Thr Gly	Leu Asp Asn Thr	Lys Thr Tyr Arg Val	Val Glu	
1305	1310	1315		
cgt gtt agc ggc	tac act cca gaa	tat gta tca ttt aaa	aat ggt	4376
Arg Val Ser Gly	Tyr Thr Pro Glu	Tyr Val Ser Phe Lys	Asn Gly	
1320	1325	1330		
gtt gtg act atc	aag aac aac aaa	aac tca aat gat cca	act cca	4421
Val Val Thr Ile	Lys Asn Asn Lys	Asn Ser Asn Asp Pro	Thr Pro	
1335	1340	1345		
atc aac cca tca	gaa cca aaa gtg	gtg act tat gga	cgt aaa ttt	4466
Ile Asn Pro Ser	Glu Pro Lys Val	Val Thr Tyr Gly Arg	Lys Phe	
1350	1355	1360		
gtg aaa aca aat	caa gct aac act	gaa cgc ttg gca	gga gct acc	4511
Val Lys Thr Asn	Gln Ala Asn Thr	Glu Arg Leu Ala Gly	Ala Thr	
1365	1370	1375		
ttc ctt gtt aag	aaa gaa gga aaa	tac ttg gca cgt	aaa gca ggt	4556
Phe Leu Val Lys	Lys Glu Gly Lys	Tyr Leu Ala Arg Lys	Ala Gly	
1380	1385	1390		
gca gca act gct	gaa gca aag gca	gct gta aaa act	gct aaa cta	4601
Ala Ala Thr Ala	Glu Ala Lys Ala	Ala Val Lys Thr Ala	Lys Leu	
1395	1400	1405		
gca ttg gat gaa	gct gtt aaa gct	tat aac gac ttg	act aaa gaa	4646
Ala Leu Asp Glu	Ala Val Lys Ala	Tyr Asn Asp Leu Thr	Lys Glu	
1410	1415	1420		
aaa caa gaa ggc	caa gaa ggt aaa	aca gca ttg gct	act gtt gat	4691
Lys Gln Glu Gly	Gln Glu Gly Lys	Thr Ala Leu Ala Thr	Val Asp	
1425	1430	1435		
caa aaa caa aaa	gct tac aat gac	gct ttt gtt aaa	gct aac tac	4736
Gln Lys Gln Lys	Ala Tyr Asn Asp	Ala Phe Val Lys Ala	Asn Tyr	
1440	1445	1450		
tca tat gaa tgg	gtt gca gat aaa	aag gct gat aat	gtt gtt aaa	4781
Ser Tyr Glu Trp	Val Ala Asp Lys	Lys Ala Asp Asn Val	Val Lys	
1455	1460	1465		
ttg atc tct aac	gcc ggt ggt caa	ttt gaa att act	ggt ttg gat	4826
Leu Ile Ser Asn	Ala Gly Gly Gln	Phe Glu Ile Thr Gly	Leu Asp	
1470	1475	1480		
aaa ggc act tat	agc ttg gaa gaa	act caa gca cca	gca ggt tat	4871
Lys Gly Thr Tyr	Ser Leu Glu Glu	Thr Gln Ala Pro Ala	Gly Tyr	
1485	1490	1495		

gcg aca ttg tca ggt gat gta aac ttt gaa gta act gcc aca tca 4916  
 Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala Thr Ser  
 1500 1505 1510

tat agc aaa ggg gct aca act gac atc gca tat gat aaa gga tct 4961  
 Tyr Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly Ser  
 1515 1520 1525

gta aaa aaa gat gcc caa caa gtt caa aac aaa aaa gta acc atc 5006  
 Val Lys Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr Ile  
 1530 1535 1540

cca caa aca ggt ggt att ggt aca att ctt ttc aca att att ggt 5051  
 Pro Gln Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile Ile Gly  
 1545 1550 1555

tta agc att atg ctt gga gca gta gtt gtc atg aaa aaa cgt caa 5096  
 Leu Ser Ile Met Leu Gly Ala Val Val Val Met Lys Lys Arg Gln  
 1560 1565 1570

tca gag gaa gct taaggctagt ctttgatggt gtataagcac agttaagct 5148  
 Ser Glu Glu Ala  
 1575

gtgcttatga tctaagggta tttcagtaga agtactctta gatcataagc aagagccatt 5208

atntaggaaga tgacgtgaag actaaaaata tcaacaaaaa aactaaaaag aagaagtcaa 5268

atcttccttt tatcattctt tttctaataag gtctatctat tttattgtat ccagtggtat 5328

cacgttttta ctatacgata gaatctaata atcaaacaca ggattttgag agag 5382

<210> 278

<211> 901

<212> PRT

<213> Streptococcus agalactiae

<400> 278

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Cys Leu Ser Gln Ile Pro Leu Asn Thr Asn Val Leu Gly Glu Ser Thr  
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Val Pro Glu Asn Gly Ala Lys Gly Lys Leu Val Val Lys Lys Thr Asp  
 35 40 45

Asp Gln Asn Lys Pro Leu Ser Lys Ala Thr Phe Val Leu Lys Thr Thr  
 50 55 60

Ala His Pro Glu Ser Lys Ile Glu Lys Val Thr Ala Glu Leu Thr Gly  
 65 70 75 80

Glu Ala Thr Phe Asp Asn Leu Ile Pro Gly Asp Tyr Thr Leu Ser Glu  
 85 90 95

Glu	Thr	Ala	Pro	Glu	Gly	Tyr	Lys	Lys	Thr	Asn	Gln	Thr	Trp	Gln	Val	100	105	110
Lys	Val	Glu	Ser	Asn	Gly	Lys	Thr	Thr	Ile	Gln	Asn	Ser	Gly	Asp	Lys	115	120	125
Asn	Ser	Thr	Ile	Gly	Gln	Asn	His	Glu	Glu	Leu	Asp	Lys	Gln	Tyr	Pro	130	135	140
Pro	Thr	Gly	Ile	Tyr	Glu	Asp	Thr	Lys	Glu	Ser	Tyr	Lys	Leu	Glu	His	145	150	155
Val	Lys	Gly	Ser	Val	Pro	Asn	Gly	Lys	Ser	Glu	Ala	Lys	Ala	Val	Asn	165	170	175
Pro	Tyr	Ser	Ser	Glu	Gly	Glu	His	Ile	Arg	Glu	Ile	Pro	Glu	Gly	Thr	180	185	190
Leu	Ser	Lys	Arg	Ile	Ser	Glu	Val	Gly	Asp	Leu	Ala	His	Asn	Lys	Tyr	195	200	205
Lys	Ile	Glu	Leu	Thr	Val	Ser	Gly	Lys	Thr	Ile	Val	Lys	Pro	Val	Asp	210	215	220
Lys	Gln	Lys	Pro	Leu	Asp	Val	Val	Phe	Val	Leu	Asp	Asn	Ser	Asn	Ser	225	230	235
Met	Asn	Asn	Asp	Gly	Pro	Asn	Phe	Gln	Arg	His	Asn	Lys	Ala	Lys	Lys	245	250	255
Ala	Ala	Glu	Ala	Leu	Gly	Thr	Ala	Val	Lys	Asp	Ile	Leu	Gly	Ala	Asn	260	265	270
Ser	Asp	Asn	Arg	Val	Ala	Leu	Val	Thr	Tyr	Gly	Ser	Asp	Ile	Phe	Asp	275	280	285
Gly	Arg	Ser	Val	Asp	Val	Val	Lys	Gly	Phe	Lys	Glu	Asp	Asp	Lys	Tyr	290	295	300
Tyr	Gly	Leu	Gln	Thr	Lys	Phe	Thr	Ile	Gln	Thr	Glu	Asn	Tyr	Ser	His	305	310	315
Lys	Gln	Leu	Thr	Asn	Asn	Ala	Glu	Glu	Ile	Ile	Lys	Arg	Ile	Pro	Thr	325	330	335
Glu	Ala	Pro	Arg	Ala	Lys	Trp	Gly	Ser	Thr	Thr	Asn	Gly	Leu	Thr	Pro	340	345	350
Glu	Gln	Gln	Lys	Gln	Tyr	Tyr	Leu	Ser	Lys	Val	Gly	Glu	Thr	Phe	Thr	355	360	365
Met	Lys	Ala	Phe	Met	Glu	Ala	Asp	Asp	Ile	Leu	Ser	Gln	Val	Asp	Arg	370	375	380
Asn	Ser	Gln	Lys	Ile	Ile	Val	His	Ile	Thr	Asp	Gly	Val	Pro	Thr	Arg	385	390	395

Ser	Tyr	Ala	Ile	Asn	Asn	Phe	Lys	Leu	Gly	Ala	Ser	Tyr	Glu	Ser	Gln	
				405					410					415		
Phe	Glu	Gln	Met	Lys	Lys	Asn	Gly	Tyr	Leu	Asn	Lys	Ser	Asn	Phe	Leu	
			420					425					430			
Leu	Thr	Asp	Lys	Pro	Glu	Asp	Ile	Lys	Gly	Asn	Gly	Glu	Ser	Tyr	Phe	
		435					440					445				
Leu	Phe	Pro	Leu	Asp	Ser	Tyr	Gln	Thr	Gln	Ile	Ile	Ser	Gly	Asn	Leu	
	450					455					460					
Gln	Lys	Leu	His	Tyr	Leu	Asp	Leu	Asn	Leu	Asn	Tyr	Pro	Lys	Gly	Thr	
465					470					475					480	
Ile	Tyr	Arg	Asn	Gly	Pro	Val	Arg	Glu	His	Gly	Thr	Pro	Thr	Lys	Leu	
			485						490					495		
Tyr	Ile	Asn	Ser	Leu	Lys	Gln	Lys	Asn	Tyr	Asp	Ile	Phe	Asn	Phe	Gly	
		500						505					510			
Ile	Asp	Ile	Ser	Ala	Phe	Arg	Gln	Val	Tyr	Asn	Glu	Asp	Tyr	Lys	Lys	
	515						520					525				
Asn	Gln	Asp	Gly	Thr	Phe	Gln	Lys	Leu	Lys	Glu	Glu	Ala	Phe	Glu	Leu	
	530					535					540					
Ser	Asp	Gly	Glu	Ile	Thr	Glu	Leu	Met	Lys	Ser	Phe	Ser	Ser	Lys	Pro	
545				550						555					560	
Glu	Tyr	Tyr	Thr	Pro	Ile	Val	Thr	Ser	Ser	Asp	Ala	Ser	Asn	Asn	Glu	
			565					570						575		
Ile	Leu	Ser	Lys	Ile	Gln	Gln	Gln	Phe	Glu	Lys	Val	Leu	Thr	Lys	Glu	
		580						585					590			
Asn	Ser	Ile	Val	Asn	Gly	Thr	Ile	Glu	Asp	Pro	Met	Gly	Asp	Lys	Ile	
	595						600					605				
Asn	Leu	Gln	Leu	Gly	Asn	Gly	Gln	Thr	Leu	Gln	Pro	Ser	Asp	Tyr	Thr	
	610					615					620					
Leu	Gln	Gly	Asn	Asp	Gly	Ser	Ile	Met	Lys	Asp	Ser	Ile	Ala	Thr	Gly	
625					630					635					640	
Gly	Pro	Asn	Asn	Asp	Gly	Gly	Ile	Leu	Lys	Gly	Val	Lys	Leu	Glu	Tyr	
			645						650					655		
Ile	Lys	Asn	Lys	Leu	Tyr	Val	Arg	Gly	Leu	Asn	Leu	Gly	Glu	Gly	Gln	
		660						665					670			
Lys	Val	Thr	Leu	Thr	Tyr	Asp	Val	Lys	Leu	Asp	Asp	Ser	Phe	Ile	Ser	
		675					680					685				
Asn	Lys	Phe	Tyr	Asp	Thr	Asn	Gly	Arg	Thr	Thr	Leu	Asn	Pro	Lys	Ser	
	690					695					700					

Glu Asp Pro Asn Thr Leu Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp  
 705 710 715 720  
 Val Arg Glu Tyr Pro Thr Ile Thr Ile Lys Asn Glu Lys Lys Leu Gly  
 725 730 735  
 Glu Ile Glu Phe Thr Lys Val Asp Lys Asp Asn Asn Lys Leu Leu Leu  
 740 745 750  
 Lys Gly Ala Thr Phe Glu Leu Gln Glu Phe Asn Glu Asp Tyr Lys Leu  
 755 760 765  
 Tyr Leu Pro Ile Lys Asn Asn Asn Ser Lys Val Val Thr Gly Glu Asn  
 770 775 780  
 Gly Lys Ile Ser Tyr Lys Asp Leu Lys Asp Gly Lys Tyr Gln Leu Ile  
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 Glu Ala Val Ser Pro Lys Asp Tyr Gln Lys Ile Thr Asn Lys Pro Ile  
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 Leu Thr Phe Glu Val Val Lys Gly Ser Ile Gln Asn Ile Ile Ala Val  
 820 825 830  
 Asn Lys Gln Ile Ser Glu Tyr His Glu Glu Gly Asp Lys His Leu Ile  
 835 840 845  
 Thr Asn Thr His Ile Pro Pro Lys Gly Ile Ile Pro Met Thr Gly Gly  
 850 855 860  
 Lys Gly Ile Leu Ser Phe Ile Leu Ile Gly Gly Ser Met Met Ser Ile  
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 Ala Gly Gly Ile Tyr Ile Trp Lys Arg Tyr Lys Lys Ser Ser Asp Ile  
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 Ser Arg Glu Lys Asp  
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&lt;210&gt; 279

&lt;211&gt; 674

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 279

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 Ile Leu Thr Ser Leu Phe Ser Val Ala Pro Ala Phe Ala Asp Asp Val  
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 Thr Thr Asp Thr Val Thr Leu His Lys Ile Val Met Pro Gln Ala Ala  
 35 40 45  
 Phe Asp Asn Phe Thr Glu Gly Thr Lys Gly Lys Asn Asp Ser Asp Tyr  
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Val	Gly	Lys	Gln	Ile	Asn	Asp	Leu	Lys	Ser	Tyr	Phe	Gly	Ser	Thr	Asp	
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Ala	Lys	Glu	Ile	Lys	Gly	Ala	Phe	Phe	Val	Phe	Lys	Asn	Glu	Thr	Gly	
				85					90					95		
Thr	Lys	Phe	Ile	Thr	Glu	Asn	Gly	Lys	Glu	Val	Asp	Thr	Leu	Glu	Ala	
			100					105					110			
Lys	Asp	Ala	Glu	Gly	Gly	Ala	Val	Leu	Ser	Gly	Leu	Thr	Lys	Asp	Thr	
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Gly	Phe	Ala	Phe	Asn	Thr	Ala	Lys	Leu	Lys	Gly	Thr	Tyr	Gln	Ile	Val	
	130					135					140					
Glu	Leu	Lys	Glu	Lys	Ser	Asn	Tyr	Asp	Asn	Asn	Gly	Ser	Ile	Leu	Ala	
145					150					155					160	
Asp	Ser	Lys	Ala	Val	Pro	Val	Lys	Ile	Thr	Leu	Pro	Leu	Val	Asn	Asn	
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Gln	Gly	Val	Val	Lys	Asp	Ala	His	Ile	Tyr	Pro	Lys	Asn	Thr	Glu	Thr	
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Lys	Pro	Gln	Val	Asp	Lys	Asn	Phe	Ala	Asp	Lys	Asp	Leu	Asp	Tyr	Thr	
		195					200					205				
Asp	Asn	Arg	Lys	Asp	Lys	Gly	Val	Val	Ser	Ala	Thr	Val	Gly	Asp	Lys	
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Lys	Leu	Val	Trp	Thr	Asp	Ser	Met	Thr	Lys	Gly	Leu	Thr	Phe	Asn	Asn	
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Asn	Val	Lys	Val	Thr	Leu	Asp	Gly	Lys	Asp	Phe	Pro	Val	Leu	Asn	Tyr	
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Lys	Leu	Val	Thr	Asp	Asp	Gln	Gly	Phe	Arg	Leu	Ala	Leu	Asn	Ala	Thr	
		275					280					285				
Gly	Leu	Ala	Ala	Val	Ala	Ala	Ala	Ala	Lys	Asp	Lys	Asp	Val	Glu	Ile	
	290					295					300					
Lys	Ile	Thr	Tyr	Ser	Ala	Thr	Val	Asn	Gly	Ser	Thr	Thr	Val	Glu	Val	
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Pro	Glu	Thr	Asn	Asp	Val	Lys	Leu	Asp	Tyr	Gly	Asn	Asn	Pro	Thr	Glu	
				325					330					335		
Glu	Ser	Glu	Pro	Gln	Glu	Gly	Thr	Pro	Ala	Asn	Gln	Glu	Ile	Lys	Val	
			340					345					350			
Ile	Lys	Asp	Trp	Ala	Val	Asp	Gly	Thr	Ile	Thr	Asp	Val	Asn	Val	Ala	
		355					360					365				

Val Lys Ala Ile Phe Thr Leu Gln Glu Lys Gln Thr Asp Gly Thr Trp  
 370 375 380  
 Val Asn Val Ala Ser His Glu Ala Thr Lys Pro Ser Arg Phe Glu His  
 385 390 395 400  
 Thr Phe Thr Gly Leu Asp Asn Thr Lys Thr Tyr Arg Val Val Glu Arg  
 405 410 415  
 Val Ser Gly Tyr Thr Pro Glu Tyr Val Ser Phe Lys Asn Gly Val Val  
 420 425 430  
 Thr Ile Lys Asn Asn Lys Asn Ser Asn Asp Pro Thr Pro Ile Asn Pro  
 435 440 445  
 Ser Glu Pro Lys Val Val Thr Tyr Gly Arg Lys Phe Val Lys Thr Asn  
 450 455 460  
 Gln Ala Asn Thr Glu Arg Leu Ala Gly Ala Thr Phe Leu Val Lys Lys  
 465 470 475 480  
 Glu Gly Lys Tyr Leu Ala Arg Lys Ala Gly Ala Ala Thr Ala Glu Ala  
 485 490 495  
 Lys Ala Ala Val Lys Thr Ala Lys Leu Ala Leu Asp Glu Ala Val Lys  
 500 505 510  
 Ala Tyr Asn Asp Leu Thr Lys Glu Lys Gln Glu Gly Gln Glu Gly Lys  
 515 520 525  
 Thr Ala Leu Ala Thr Val Asp Gln Lys Gln Lys Ala Tyr Asn Asp Ala  
 530 535 540  
 Phe Val Lys Ala Asn Tyr Ser Tyr Glu Trp Val Ala Asp Lys Lys Ala  
 545 550 555 560  
 Asp Asn Val Val Lys Leu Ile Ser Asn Ala Gly Gly Gln Phe Glu Ile  
 565 570 575  
 Thr Gly Leu Asp Lys Gly Thr Tyr Ser Leu Glu Glu Thr Gln Ala Pro  
 580 585 590  
 Ala Gly Tyr Ala Thr Leu Ser Gly Asp Val Asn Phe Glu Val Thr Ala  
 595 600 605  
 Thr Ser Tyr Ser Lys Gly Ala Thr Thr Asp Ile Ala Tyr Asp Lys Gly  
 610 615 620  
 Ser Val Lys Lys Asp Ala Gln Gln Val Gln Asn Lys Lys Val Thr Ile  
 625 630 635 640  
 Pro Gln Thr Gly Gly Ile Gly Thr Ile Leu Phe Thr Ile Ile Gly Leu  
 645 650 655  
 Ser Ile Met Leu Gly Ala Val Val Val Met Lys Lys Arg Gln Ser Glu  
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 Glu Ala



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<400> 280  
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 atactgcata tttcttgaaa atatgggtgta tattgtgaat aaaatgatga ccaagttaat 120  
 tgaattttcc tatcgaaaaa tttttcaaaa aaaataatctt cacgctcaaa tcatttgatt 180  
 gtcaaataaa tagagccttt ataaaaatat tatataagta taaaatgtaa aaaaataaaa 240  
 aaatgatatt tttatttgat tcaaattgtat ttaataaaaa tacaaagttt ctaaaaaagt 300  
 aaaaattcca tctcaataaa cagcgtagt tattataacc gaacattatt gtccttaaaa 360  
 cattaaaaca aaaacaaaag ttcgtaattt aattaatttg tcatgttact aatcttatgc 420  
 taatatatta tctcgtgata agtttttgat gtaaaaatta tcatgaaaaa gaaaagagag 480  
 atggaa atg aaa aaa caa ttt tta aaa tca gca gcg att cta tcg cta 528  
 Met Lys Lys Gln Phe Leu Lys Ser Ala Ala Ile Leu Ser Leu  
 1 5 10  
 gca gta aca gca gta tct aca agt cag ccg gta gcc ggg ata act aaa 576  
 Ala Val Thr Ala Val Ser Thr Ser Gln Pro Val Ala Gly Ile Thr Lys  
 15 20 25 30  
 gat tat aat aac cga aat gaa aaa gta aaa aag tat tta caa gaa aat 624  
 Asp Tyr Asn Asn Arg Asn Glu Lys Val Lys Lys Tyr Leu Gln Glu Asn  
 35 40 45  
 aat ttc ggt cat aaa ata gcg tat gga tgg aaa aat aaa gta gaa ttt 672  
 Asn Phe Gly His Lys Ile Ala Tyr Gly Trp Lys Asn Lys Val Glu Phe  
 50 55 60  
 gat ttt cgt tat tta ttg gat act gct aaa tat tta gta aat aaa gaa 720  
 Asp Phe Arg Tyr Leu Leu Asp Thr Ala Lys Tyr Leu Val Asn Lys Glu  
 65 70 75  
 gaa ttt caa gat cct tta tat aat gat gcg cgc gaa gaa ttg ata agt 768  
 Glu Phe Gln Asp Pro Leu Tyr Asn Asp Ala Arg Glu Glu Leu Ile Ser  
 80 85 90

ttt att ttt cct tat gag aaa ttt tta att aac aat cgt gac ata act	816
Phe Ile Phe Pro Tyr Glu Lys Phe Leu Ile Asn Asn Arg Asp Ile Thr	
95 100 105 110	
aaa tta aca gtt aat cag tat gaa gcg att gtg aat aga atg agt gtt	864
Lys Leu Thr Val Asn Gln Tyr Glu Ala Ile Val Asn Arg Met Ser Val	
115 120 125	
gct tta caa aaa ttt tca aag aat att ttt gag aaa cag aaa gta aat	912
Ala Leu Gln Lys Phe Ser Lys Asn Ile Phe Glu Lys Gln Lys Val Asn	
130 135 140	
aaa gat tta atc cct att gcg ttt tgg att gag aaa agt tac aga act	960
Lys Asp Leu Ile Pro Ile Ala Phe Trp Ile Glu Lys Ser Tyr Arg Thr	
145 150 155	
gtt gga acg aat gaa atc gcc gct tct gta ggc att caa gga gga ttt	1008
Val Gly Thr Asn Glu Ile Ala Ala Ser Val Gly Ile Gln Gly Gly Phe	
160 165 170	
tat caa aac ttc cat gat tat tat aat tat tca tat cta tta aat tct	1056
Tyr Gln Asn Phe His Asp Tyr Tyr Asn Tyr Ser Tyr Leu Leu Asn Ser	
175 180 185 190	
tta tgg cat gaa gga aat gta aaa gaa gta gtt aag gat tat gaa aac	1104
Leu Trp His Glu Gly Asn Val Lys Glu Val Val Lys Asp Tyr Glu Asn	
195 200 205	
act att cgt caa ata cta tct aaa aag cat gag att gaa aaa att ctt	1152
Thr Ile Arg Gln Ile Leu Ser Lys Lys His Glu Ile Glu Lys Ile Leu	
210 215 220	
aat cag agc act tct gat atc tct ata gat gat gat gat tac gaa aaa	1200
Asn Gln Ser Thr Ser Asp Ile Ser Ile Asp Asp Asp Asp Tyr Glu Lys	
225 230 235	
gga aat aaa gaa ttg cta agg gaa aaa tta aat att att cta aat ctt	1248
Gly Asn Lys Glu Leu Leu Arg Glu Lys Leu Asn Ile Ile Leu Asn Leu	
240 245 250	
tca aag aga gat tac aga gta act cca tac tat gaa gtg aat aaa cta	1296
Ser Lys Arg Asp Tyr Arg Val Thr Pro Tyr Tyr Glu Val Asn Lys Leu	
255 260 265 270	
cat aca ggg ctt att tta ttg gag gat gtc cct aat tta aag att gct	1344
His Thr Gly Leu Ile Leu Leu Glu Asp Val Pro Asn Leu Lys Ile Ala	
275 280 285	
aag gat aag ttg ttc tca tta gag aat tct tta aag gaa tac aaa gga	1392
Lys Asp Lys Leu Phe Ser Leu Glu Asn Ser Leu Lys Glu Tyr Lys Gly	
290 295 300	
gag aaa gtt aat tat gag gaa cta aga ttc aat acg gaa cct tta act	1440
Glu Lys Val Asn Tyr Glu Glu Leu Arg Phe Asn Thr Glu Pro Leu Thr	
305 310 315	

agt tac tta gaa aat aaa gaa aaa ttt tta gtc ccc aat att cca tat	1488
Ser Tyr Leu Glu Asn Lys Glu Lys Phe Leu Val Pro Asn Ile Pro Tyr	
320 325 330	
aaa aat aaa tta att tta agg gaa gaa gat aaa tat agt ttt gaa gat	1536
Lys Asn Lys Leu Ile Leu Arg Glu Glu Asp Lys Tyr Ser Phe Glu Asp	
335 340 345 350	
gat gaa gaa gag ttt gga aat gaa ctt cta agt tac aat aag ctt aag	1584
Asp Glu Glu Glu Phe Gly Asn Glu Leu Leu Ser Tyr Asn Lys Leu Lys	
355 360 365	
aat gaa gtt tta cct gtt aat att aca act tct act ata tta aaa ccg	1632
Asn Glu Val Leu Pro Val Asn Ile Thr Thr Ser Thr Ile Leu Lys Pro	
370 375 380	
ttt gaa cag aag aaa att gtg gaa gat ttt aat cct tat tct aat tta	1680
Phe Glu Gln Lys Lys Ile Val Glu Asp Phe Asn Pro Tyr Ser Asn Leu	
385 390 395	
gac aat tta gaa ata aaa aaa ata agg ttg aat ggc tcc caa aaa caa	1728
Asp Asn Leu Glu Ile Lys Lys Ile Arg Leu Asn Gly Ser Gln Lys Gln	
400 405 410	
aaa gta gaa cag gaa aaa act aaa tcg cca act cct caa aaa gag act	1776
Lys Val Glu Gln Glu Lys Thr Lys Ser Pro Thr Pro Gln Lys Glu Thr	
415 420 425 430	
gtg aaa gaa caa act gag caa aaa gta tct gga aat act caa gag gta	1824
Val Lys Glu Gln Thr Glu Gln Lys Val Ser Gly Asn Thr Gln Glu Val	
435 440 445	
gaa aag aaa tct gaa act gtg gca act tca caa caa agt tca gtt gcg	1872
Glu Lys Lys Ser Glu Thr Val Ala Thr Ser Gln Gln Ser Ser Val Ala	
450 455 460	
caa act tct gtc caa cag ccg gct ccg gtt caa tca gtt gtt caa gaa	1920
Gln Thr Ser Val Gln Gln Pro Ala Pro Val Gln Ser Val Val Gln Glu	
465 470 475	
tcc aaa gct tct caa gag gag att aat gca gca cac gat gct att tcg	1968
Ser Lys Ala Ser Gln Glu Glu Ile Asn Ala Ala His Asp Ala Ile Ser	
480 485 490	
gcg tat aaa tca aca gtc aat att gct aat aca gcc ggt gta aca act	2016
Ala Tyr Lys Ser Thr Val Asn Ile Ala Asn Thr Ala Gly Val Thr Thr	
495 500 505 510	
gcg gaa atg acc acg ctc att aat act caa act tct aat ctt tct gat	2064
Ala Glu Met Thr Thr Leu Ile Asn Thr Gln Thr Ser Asn Leu Ser Asp	
515 520 525	
gtt gag aaa gct tta gga aat aat aag gtt aat aat ggt gca gtc aat	2112
Val Glu Lys Ala Leu Gly Asn Asn Lys Val Asn Asn Gly Ala Val Asn	
530 535 540	

gta ttg aga gaa gat aca gct cgt ctt gag aat atg att tgg aat cgt Val Leu Arg Glu Asp Thr Ala Arg Leu Glu Asn Met Ile Trp Asn Arg 545 550 555	2160
gct tac caa gct att gaa gaa ttc aac gtc gct cgt aat act tat aat Ala Tyr Gln Ala Ile Glu Glu Phe Asn Val Ala Arg Asn Thr Tyr Asn 560 565 570	2208
aac caa atc aag aca gaa aca gtt cca gtt gat aat gat att gaa gct Asn Gln Ile Lys Thr Glu Thr Val Pro Val Asp Asn Asp Ile Glu Ala 575 580 585 590	2256
att tta gca ggt tct caa gct aaa att agc cat ttg gac aat cgt atc Ile Leu Ala Gly Ser Gln Ala Lys Ile Ser His Leu Asp Asn Arg Ile 595 600 605	2304
gga gcg cgc cac atg gat caa gct ttt gta gct agt tta tta gaa gtt Gly Ala Arg His Met Asp Gln Ala Phe Val Ala Ser Leu Leu Glu Val 610 615 620	2352
act gag atg agt aaa tca atc tca tcg cgt ata aaa gag tagacactgc Thr Glu Met Ser Lys Ser Ile Ser Ser Arg Ile Lys Glu 625 630 635	2401
tatcaaggcg atcttaaact tttgtattaa actaacctaa aagatagaaa gagactaat atg aaa aaa ata aca act tta atc tta gct agt agc tta tta cta gtt Met Lys Lys Ile Thr Thr Leu Ile Leu Ala Ser Ser Leu Leu Leu Val 640 645 650	2460 2508
gca acg aca tcg gtt aaa gct gat gat aac ttt gaa atg cca acg cgt Ala Thr Thr Ser Val Lys Ala Asp Asp Asn Phe Glu Met Pro Thr Arg 655 660 665	2556
tat gtt aaa atg agt gaa aaa tca aaa gca ttt tat caa aga cta caa Tyr Val Lys Met Ser Glu Lys Ser Lys Ala Phe Tyr Gln Arg Leu Gln 670 675 680	2604
gaa aaa caa cgt aag gca cat act act gtg aag act ttt aat aat tca Glu Lys Gln Arg Lys Ala His Thr Thr Val Lys Thr Phe Asn Asn Ser 685 690 695	2652
gaa ata agg cat caa cta cct ctt aaa caa gaa aag gct aga aat gat Glu Ile Arg His Gln Leu Pro Leu Lys Gln Glu Lys Ala Arg Asn Asp 700 705 710 715	2700
atc tac aat tta ggc att ctt att tct cag gag tct aaa ggg ttc atc Ile Tyr Asn Leu Gly Ile Leu Ile Ser Gln Glu Ser Lys Gly Phe Ile 720 725 730	2748
caa cgt att gat aat gcc tat tct ttg gaa aat gtc tca gat att gtt Gln Arg Ile Asp Asn Ala Tyr Ser Leu Glu Asn Val Ser Asp Ile Val 735 740 745	2796
aat gaa gct cag gct ttg tat aaa cgt aac tat gat tta ttt gaa aaa Asn Glu Ala Gln Ala Leu Tyr Lys Arg Asn Tyr Asp Leu Phe Glu Lys 750 755 760	2844

atc aaa tct aca cgt gat aag gtt caa gtc tta ctt gca tcg cat caa 2892  
 Ile Lys Ser Thr Arg Asp Lys Val Gln Val Leu Leu Ala Ser His Gln  
 765 770 775

gat aat aca gac tta aaa aac ttt tat gct gag tta gat gat atg tat 2940  
 Asp Asn Thr Asp Leu Lys Asn Phe Tyr Ala Glu Leu Asp Asp Met Tyr  
 780 785 790 795

gaa cat gtt tat ctc aat gaa agt aga gtg gag gcg ata aac aga aat 2988  
 Glu His Val Tyr Leu Asn Glu Ser Arg Val Glu Ala Ile Asn Arg Asn  
 800 805 810

atc caa aaa tat aat tagtttctaa actaacaac attcctaaat ataagatatt 3043  
 Ile Gln Lys Tyr Asn  
 815

aaaccctact tattgattag tgagtagggt tttactgttt taaatagctt tctgctcaga 3103

atgtaagcct tgtcatttca aaggaactat gttattattc ttaagtaaata taaataggac 3163

atttgggggtg cgtaacagct gagattatac ccattga 3200

<210> 281

<211> 635

<212> PRT

<213> Streptococcus agalactiae

<400> 281

Met Lys Lys Gln Phe Leu Lys Ser Ala Ala Ile Leu Ser Leu Ala Val  
 1 5 10 15

Thr Ala Val Ser Thr Ser Gln Pro Val Ala Gly Ile Thr Lys Asp Tyr  
 20 25 30

Asn Asn Arg Asn Glu Lys Val Lys Lys Tyr Leu Gln Glu Asn Asn Phe  
 35 40 45

Gly His Lys Ile Ala Tyr Gly Trp Lys Asn Lys Val Glu Phe Asp Phe  
 50 55 60

Arg Tyr Leu Leu Asp Thr Ala Lys Tyr Leu Val Asn Lys Glu Glu Phe  
 65 70 75 80

Gln Asp Pro Leu Tyr Asn Asp Ala Arg Glu Glu Leu Ile Ser Phe Ile  
 85 90 95

Phe Pro Tyr Glu Lys Phe Leu Ile Asn Asn Arg Asp Ile Thr Lys Leu  
 100 105 110

Thr Val Asn Gln Tyr Glu Ala Ile Val Asn Arg Met Ser Val Ala Leu  
 115 120 125

Gln Lys Phe Ser Lys Asn Ile Phe Glu Lys Gln Lys Val Asn Lys Asp  
 130 135 140

Leu Ile Pro Ile Ala Phe Trp Ile Glu Lys Ser Tyr Arg Thr Val Gly  
 145 150 155 160

Thr	Asn	Glu	Ile	Ala	Ala	Ser	Val	Gly	Ile	Gln	Gly	Gly	Phe	Tyr	Gln	
				165					170					175		
Asn	Phe	His	Asp	Tyr	Tyr	Asn	Tyr	Ser	Tyr	Leu	Leu	Asn	Ser	Leu	Trp	
			180					185					190			
His	Glu	Gly	Asn	Val	Lys	Glu	Val	Val	Lys	Asp	Tyr	Glu	Asn	Thr	Ile	
		195					200					205				
Arg	Gln	Ile	Leu	Ser	Lys	Lys	His	Glu	Ile	Glu	Lys	Ile	Leu	Asn	Gln	
	210					215					220					
Ser	Thr	Ser	Asp	Ile	Ser	Ile	Asp	Asp	Asp	Asp	Tyr	Glu	Lys	Gly	Asn	
225					230					235					240	
Lys	Glu	Leu	Leu	Arg	Glu	Lys	Leu	Asn	Ile	Ile	Leu	Asn	Leu	Ser	Lys	
				245					250					255		
Arg	Asp	Tyr	Arg	Val	Thr	Pro	Tyr	Tyr	Glu	Val	Asn	Lys	Leu	His	Thr	
			260					265						270		
Gly	Leu	Ile	Leu	Leu	Glu	Asp	Val	Pro	Asn	Leu	Lys	Ile	Ala	Lys	Asp	
		275					280					285				
Lys	Leu	Phe	Ser	Leu	Glu	Asn	Ser	Leu	Lys	Glu	Tyr	Lys	Gly	Glu	Lys	
	290					295					300					
Val	Asn	Tyr	Glu	Glu	Leu	Arg	Phe	Asn	Thr	Glu	Pro	Leu	Thr	Ser	Tyr	
305					310					315					320	
Leu	Glu	Asn	Lys	Glu	Lys	Phe	Leu	Val	Pro	Asn	Ile	Pro	Tyr	Lys	Asn	
				325					330					335		
Lys	Leu	Ile	Leu	Arg	Glu	Glu	Asp	Lys	Tyr	Ser	Phe	Glu	Asp	Asp	Glu	
			340					345					350			
Glu	Glu	Phe	Gly	Asn	Glu	Leu	Leu	Ser	Tyr	Asn	Lys	Leu	Lys	Asn	Glu	
		355					360					365				
Val	Leu	Pro	Val	Asn	Ile	Thr	Thr	Ser	Thr	Ile	Leu	Lys	Pro	Phe	Glu	
	370					375					380					
Gln	Lys	Lys	Ile	Val	Glu	Asp	Phe	Asn	Pro	Tyr	Ser	Asn	Leu	Asp	Asn	
385					390					395					400	
Leu	Glu	Ile	Lys	Lys	Ile	Arg	Leu	Asn	Gly	Ser	Gln	Lys	Gln	Lys	Val	
				405					410					415		
Glu	Gln	Glu	Lys	Thr	Lys	Ser	Pro	Thr	Pro	Gln	Lys	Glu	Thr	Val	Lys	
			420					425					430			
Glu	Gln	Thr	Glu	Gln	Lys	Val	Ser	Gly	Asn	Thr	Gln	Glu	Val	Glu	Lys	
		435					440					445				
Lys	Ser	Glu	Thr	Val	Ala	Thr	Ser	Gln	Gln	Ser	Ser	Val	Ala	Gln	Thr	
	450					455					460					

Ser Val Gln Gln Pro Ala Pro Val Gln Ser Val Val Gln Glu Ser Lys  
 465 470 475 480  
 Ala Ser Gln Glu Glu Ile Asn Ala Ala His Asp Ala Ile Ser Ala Tyr  
 485 490 495  
 Lys Ser Thr Val Asn Ile Ala Asn Thr Ala Gly Val Thr Thr Ala Glu  
 500 505 510  
 Met Thr Thr Leu Ile Asn Thr Gln Thr Ser Asn Leu Ser Asp Val Glu  
 515 520 525  
 Lys Ala Leu Gly Asn Asn Lys Val Asn Asn Gly Ala Val Asn Val Leu  
 530 535 540  
 Arg Glu Asp Thr Ala Arg Leu Glu Asn Met Ile Trp Asn Arg Ala Tyr  
 545 550 555 560  
 Gln Ala Ile Glu Glu Phe Asn Val Ala Arg Asn Thr Tyr Asn Asn Gln  
 565 570 575  
 Ile Lys Thr Glu Thr Val Pro Val Asp Asn Asp Ile Glu Ala Ile Leu  
 580 585 590  
 Ala Gly Ser Gln Ala Lys Ile Ser His Leu Asp Asn Arg Ile Gly Ala  
 595 600 605  
 Arg His Met Asp Gln Ala Phe Val Ala Ser Leu Leu Glu Val Thr Glu  
 610 615 620  
 Met Ser Lys Ser Ile Ser Ser Arg Ile Lys Glu  
 625 630 635

&lt;210&gt; 282

&lt;211&gt; 181

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 282

Met Lys Lys Ile Thr Thr Leu Ile Leu Ala Ser Ser Leu Leu Leu Val  
 1 5 10 15  
 Ala Thr Thr Ser Val Lys Ala Asp Asp Asn Phe Glu Met Pro Thr Arg  
 20 25 30  
 Tyr Val Lys Met Ser Glu Lys Ser Lys Ala Phe Tyr Gln Arg Leu Gln  
 35 40 45  
 Glu Lys Gln Arg Lys Ala His Thr Thr Val Lys Thr Phe Asn Asn Ser  
 50 55 60  
 Glu Ile Arg His Gln Leu Pro Leu Lys Gln Glu Lys Ala Arg Asn Asp  
 65 70 75 80  
 Ile Tyr Asn Leu Gly Ile Leu Ile Ser Gln Glu Ser Lys Gly Phe Ile  
 85 90 95

Gln Arg Ile Asp Asn Ala Tyr Ser Leu Glu Asn Val Ser Asp Ile Val  
 100 105 110

Asn Glu Ala Gln Ala Leu Tyr Lys Arg Asn Tyr Asp Leu Phe Glu Lys  
 115 120 125

Ile Lys Ser Thr Arg Asp Lys Val Gln Val Leu Leu Ala Ser His Gln  
 130 135 140

Asp Asn Thr Asp Leu Lys Asn Phe Tyr Ala Glu Leu Asp Asp Met Tyr  
 145 150 155 160

Glu His Val Tyr Leu Asn Glu Ser Arg Val Glu Ala Ile Asn Arg Asn  
 165 170 175

Ile Gln Lys Tyr Asn  
 180

&lt;210&gt; 283

&lt;211&gt; 643

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 283

Met Lys Lys Lys Arg Glu Met Glu Met Lys Lys Gln Phe Leu Lys Ser  
 1 5 10 15

Ala Ala Ile Leu Ser Leu Ala Val Thr Ala Val Ser Thr Ser Gln Pro  
 20 25 30

Val Ala Gly Ile Thr Lys Asp Tyr Asn Asn Arg Asn Glu Lys Val Lys  
 35 40 45

Lys Tyr Leu Gln Glu Asn Asn Phe Gly His Lys Ile Ala Tyr Gly Trp  
 50 55 60

Lys Asn Lys Val Glu Phe Asp Phe Arg Tyr Leu Leu Asp Thr Ala Lys  
 65 70 75 80

Tyr Leu Val Asn Lys Glu Glu Phe Gln Asp Pro Leu Tyr Asn Asp Ala  
 85 90 95

Arg Glu Glu Leu Ile Ser Phe Ile Phe Pro Tyr Glu Lys Phe Leu Ile  
 100 105 110

Asn Asn Arg Asp Ile Thr Lys Leu Thr Val Asn Gln Tyr Glu Ala Ile  
 115 120 125

Val Asn Arg Met Ser Val Ala Leu Gln Lys Phe Ser Lys Asn Ile Phe  
 130 135 140

Glu Lys Gln Lys Val Asn Lys Asp Leu Ile Pro Ile Ala Phe Trp Ile  
 145 150 155 160

Glu Lys Ser Tyr Arg Thr Val Gly Thr Asn Glu Ile Ala Ala Ser Val  
 165 170 175



Gly	Ile	Gln	Gly	Gly	Phe	Tyr	Gln	Asn	Phe	His	Asp	Tyr	Tyr	Asn	Tyr		
			180					185						190			
Ser	Tyr	Leu	Leu	Asn	Ser	Leu	Trp	His	Glu	Gly	Asn	Val	Lys	Glu	Val		
		195					200					205					
Val	Lys	Asp	Tyr	Glu	Asn	Thr	Ile	Arg	Gln	Ile	Leu	Ser	Lys	Lys	His		
	210					215					220						
Glu	Ile	Glu	Lys	Ile	Leu	Asn	Gln	Ser	Thr	Ser	Asp	Ile	Ser	Ile	Asp		
225					230					235					240		
Asp	Asp	Asp	Tyr	Glu	Lys	Gly	Asn	Lys	Glu	Leu	Leu	Arg	Glu	Lys	Leu		
				245					250					255			
Asn	Ile	Ile	Leu	Asn	Leu	Ser	Lys	Arg	Asp	Tyr	Arg	Val	Thr	Pro	Tyr		
			260					265					270				
Tyr	Glu	Val	Asn	Lys	Leu	His	Thr	Gly	Leu	Ile	Leu	Leu	Glu	Asp	Val		
	275						280						285				
Pro	Asn	Leu	Lys	Ile	Ala	Lys	Asp	Lys	Leu	Phe	Ser	Leu	Glu	Asn	Ser		
	290					295					300						
Leu	Lys	Glu	Tyr	Lys	Gly	Glu	Lys	Val	Asn	Tyr	Glu	Glu	Leu	Arg	Phe		
305					310					315					320		
Asn	Thr	Glu	Pro	Leu	Thr	Ser	Tyr	Leu	Glu	Asn	Lys	Glu	Lys	Phe	Leu		
				325					330					335			
Val	Pro	Asn	Ile	Pro	Tyr	Lys	Asn	Lys	Leu	Ile	Leu	Arg	Glu	Glu	Asp		
			340					345					350				
Lys	Tyr	Ser	Phe	Glu	Asp	Asp	Glu	Glu	Glu	Phe	Gly	Asn	Glu	Leu	Leu		
		355					360					365					
Ser	Tyr	Asn	Lys	Leu	Lys	Asn	Glu	Val	Leu	Pro	Val	Asn	Ile	Thr	Thr		
	370					375					380						
Ser	Thr	Ile	Leu	Lys	Pro	Phe	Glu	Gln	Lys	Lys	Ile	Val	Glu	Asp	Phe		
385					390					395					400		
Asn	Pro	Tyr	Ser	Asn	Leu	Asp	Asn	Leu	Glu	Ile	Lys	Lys	Ile	Arg	Leu		
				405					410					415			
Asn	Gly	Ser	Gln	Lys	Gln	Lys	Val	Glu	Gln	Glu	Lys	Thr	Lys	Ser	Pro		
			420					425					430				
Thr	Pro	Gln	Lys	Glu	Thr	Val	Lys	Glu	Gln	Thr	Glu	Gln	Lys	Val	Ser		
		435					440						445				
Gly	Asn	Thr	Gln	Glu	Val	Glu	Lys	Lys	Ser	Glu	Thr	Val	Ala	Thr	Ser		
	450					455					460						
Gln	Gln	Ser	Ser	Val	Ala	Gln	Thr	Ser	Val	Gln	Gln	Pro	Ala	Pro	Val		
465					470					475					480		

Gln Ser Val Val Gln Glu Ser Lys Ala Ser Gln Glu Glu Ile Asn Ala  
 485 490 495  
 Ala His Asp Ala Ile Ser Ala Tyr Lys Ser Thr Val Asn Ile Ala Asn  
 500 505 510  
 Thr Ala Gly Val Thr Thr Ala Glu Met Thr Thr Leu Ile Asn Thr Gln  
 515 520 525  
 Thr Ser Asn Leu Ser Asp Val Glu Lys Ala Leu Gly Asn Asn Lys Val  
 530 535 540  
 Asn Asn Gly Ala Val Asn Val Leu Arg Glu Asp Thr Ala Arg Leu Glu  
 545 550 555 560  
 Asn Met Ile Trp Asn Arg Ala Tyr Gln Ala Ile Glu Glu Phe Asn Val  
 565 570 575  
 Ala Arg Asn Thr Tyr Asn Asn Gln Ile Lys Thr Glu Thr Val Pro Val  
 580 585 590  
 Asp Asn Asp Ile Glu Ala Ile Leu Ala Gly Ser Gln Ala Lys Ile Ser  
 595 600 605  
 His Leu Asp Asn Arg Ile Gly Ala Arg His Met Asp Gln Ala Phe Val  
 610 615 620  
 Ala Ser Leu Leu Glu Val Thr Glu Met Ser Lys Ser Ile Ser Ser Arg  
 625 630 635 640  
 Ile Lys Glu

&lt;210&gt; 284

&lt;211&gt; 635

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 284

Met Lys Lys Gln Phe Leu Lys Ser Ala Ala Ile Leu Ser Leu Ala Val  
 1 5 10 15  
 Thr Ala Val Ser Thr Ser Gln Pro Val Ala Gly Ile Thr Lys Asp Tyr  
 20 25 30  
 Asn Asn Arg Asn Glu Lys Val Lys Lys Tyr Leu Gln Glu Asn Asn Phe  
 35 40 45  
 Gly His Lys Ile Ala Tyr Gly Trp Lys Asn Lys Val Glu Phe Asp Phe  
 50 55 60  
 Arg Tyr Leu Leu Asp Thr Ala Lys Tyr Leu Val Asn Lys Glu Glu Phe  
 65 70 75 80  
 Gln Asp Pro Leu Tyr Asn Asp Ala Arg Glu Glu Leu Ile Ser Phe Ile  
 85 90 95

Phe	Pro	Tyr	Glu	Lys	Phe	Leu	Ile	Asn	Asn	Arg	Asp	Ile	Thr	Lys	Leu		
			100					105					110				
Thr	Val	Asn	Gln	Tyr	Glu	Ala	Ile	Val	Asn	Arg	Met	Ser	Val	Ala	Leu		
		115					120					125					
Gln	Lys	Phe	Ser	Lys	Asn	Ile	Phe	Glu	Lys	Gln	Lys	Val	Asn	Lys	Asp		
	130					135					140						
Leu	Ile	Pro	Ile	Ala	Phe	Trp	Ile	Glu	Lys	Ser	Tyr	Arg	Thr	Val	Gly		
145					150					155					160		
Thr	Asn	Glu	Ile	Ala	Ala	Ser	Val	Gly	Ile	Gln	Gly	Gly	Phe	Tyr	Gln		
				165				170							175		
Asn	Phe	His	Asp	Tyr	Tyr	Asn	Tyr	Ser	Tyr	Leu	Leu	Asn	Ser	Leu	Trp		
			180					185					190				
His	Glu	Gly	Asn	Val	Lys	Glu	Val	Val	Lys	Asp	Tyr	Glu	Asn	Thr	Ile		
	195						200					205					
Arg	Gln	Ile	Leu	Ser	Lys	Lys	His	Glu	Ile	Glu	Lys	Ile	Leu	Asn	Gln		
	210					215						220					
Ser	Thr	Ser	Asp	Ile	Ser	Ile	Asp	Asp	Asp	Asp	Tyr	Glu	Lys	Gly	Asn		
225					230					235					240		
Lys	Glu	Leu	Leu	Arg	Glu	Lys	Leu	Asn	Ile	Ile	Leu	Asn	Leu	Ser	Lys		
				245					250					255			
Arg	Asp	Tyr	Arg	Val	Thr	Pro	Tyr	Tyr	Glu	Val	Asn	Lys	Leu	His	Thr		
			260					265					270				
Gly	Leu	Ile	Leu	Leu	Glu	Asp	Val	Pro	Asn	Leu	Lys	Ile	Ala	Lys	Asp		
	275						280					285					
Lys	Leu	Phe	Ser	Leu	Glu	Asn	Ser	Leu	Lys	Glu	Tyr	Lys	Gly	Glu	Lys		
	290					295					300						
Val	Asn	Tyr	Glu	Glu	Leu	Arg	Phe	Asn	Thr	Glu	Pro	Leu	Thr	Ser	Tyr		
305					310					315					320		
Leu	Glu	Asn	Lys	Glu	Lys	Phe	Leu	Val	Pro	Asn	Ile	Pro	Tyr	Lys	Asn		
				325				330						335			
Lys	Leu	Ile	Leu	Arg	Glu	Glu	Asp	Lys	Tyr	Ser	Phe	Glu	Asp	Asp	Glu		
			340				345						350				
Glu	Glu	Phe	Gly	Asn	Glu	Leu	Leu	Ser	Tyr	Asn	Lys	Leu	Lys	Asn	Glu		
		355					360					365					
Val	Leu	Pro	Val	Asn	Ile	Thr	Thr	Ser	Thr	Ile	Leu	Lys	Pro	Phe	Glu		
	370					375					380						
Gln	Lys	Lys	Ile	Val	Glu	Asp	Phe	Asn	Pro	Tyr	Ser	Asn	Leu	Asp	Asn		
385					390					395					400		

Leu Glu Ile Lys Lys Ile Arg Leu Asn Gly Ser Gln Lys Gln Lys Val  
405 410 415

Glu Gln Glu Lys Thr Lys Ser Pro Thr Pro Gln Lys Glu Thr Val Lys  
420 425 430

Glu Gln Thr Glu Gln Lys Val Ser Gly Asn Thr Gln Glu Val Glu Lys  
435 440 445

Lys Ser Glu Thr Val Ala Thr Ser Gln Gln Ser Ser Val Ala Gln Thr  
450 455 460

Ser Val Gln Gln Pro Ala Pro Val Gln Ser Val Val Gln Glu Ser Lys  
465 470 475 480

Ala Ser Gln Glu Glu Ile Asn Ala Ala His Asp Ala Ile Ser Ala Tyr  
485 490 495

Lys Ser Thr Val Asn Ile Ala Asn Thr Ala Gly Val Thr Thr Ala Glu  
500 505 510

Met Thr Thr Leu Ile Asn Thr Gln Thr Ser Asn Leu Ser Asp Val Glu  
515 520 525

Lys Ala Leu Gly Asn Asn Lys Val Asn Asn Gly Ala Val Asn Val Leu  
530 535 540

Arg Glu Asp Thr Ala Arg Leu Glu Asn Met Ile Trp Asn Arg Ala Tyr  
545 550 555 560

Gln Ala Ile Glu Glu Phe Asn Val Ala Arg Asn Thr Tyr Asn Asn Gln  
565 570 575

Ile Lys Thr Glu Thr Val Pro Val Asp Asn Asp Ile Glu Ala Ile Leu  
580 585 590

Ala Gly Ser Gln Ala Lys Ile Ser His Leu Asp Asn Arg Ile Gly Ala  
595 600 605

Arg His Met Asp Gln Ala Phe Val Ala Ser Leu Leu Glu Val Thr Glu  
610 615 620

Met Ser Lys Ser Ile Ser Ser Arg Ile Lys Glu  
625 630 635

<210> 285

<211> 753

<212> PRT

<213> Streptococcus agalactiae

<400> 285

Met Lys Lys Gln Phe Leu Lys Ser Ala Ala Ile Leu Ser Leu Ala Val  
1 5 10 15

Thr Ala Val Ser Thr Ser Gln Pro Val Gly Ala Ile Val Gly Lys Asp  
20 25 30

Glu	Thr	Lys	Leu	Arg	Gln	Gln	Leu	Gly	Tyr	Ile	Asp	Ser	Lys	Lys	Ser
		35					40					45			
Gly	Lys	Lys	Ile	Asp	Glu	Arg	Trp	Gly	Glu	Lys	Ile	Tyr	Asn	Tyr	Leu
	50					55					60				
Ser	Tyr	Glu	Leu	Ile	Glu	Ala	Asn	Glu	Trp	Ile	Asn	Arg	Ser	Glu	Phe
65					70					75					80
Gln	Glu	Pro	Glu	Tyr	Arg	Thr	Ile	Leu	Ser	Glu	Phe	Lys	Asp	Lys	Ile
				85					90					95	
Asp	Ser	Ile	Glu	Tyr	Tyr	Leu	Ile	Asn	Leu	Ser	Asn	Ile	Ala	Lys	Glu
			100					105					110		
Asp	Ala	His	Gln	Arg	Asn	Ile	Leu	Gln	Ser	Leu	Asp	Lys	Tyr	Glu	Lys
		115					120					125			
Ser	Gly	Ile	Tyr	Asn	Leu	Asp	Gln	Gly	Val	Tyr	Asn	Tyr	Ile	Tyr	Gln
	130					135					140				
Glu	Ile	Ser	Ser	Ala	Lys	His	Lys	Phe	Ser	Asp	Gly	Val	Asp	Lys	Ile
145					150					155					160
Tyr	Arg	Leu	Asp	Ser	Thr	Leu	Phe	Pro	Phe	Ser	Val	Trp	Tyr	Asp	Lys
				165					170					175	
His	Leu	Asp	Asn	Asn	Asp	Asn	Tyr	Lys	Asp	Asn	Lys	Asp	Phe	Lys	Glu
			180					185					190		
Tyr	Ile	Ala	Leu	Leu	Asn	Glu	Ile	Thr	Arg	Lys	Ala	Arg	Leu	Gly	Tyr
		195					200					205			
Gln	Ile	Val	Asn	Asn	His	Lys	Asp	Gly	Glu	His	Lys	Asp	Glu	Ala	Glu
	210					215					220				
Ile	Leu	Asp	Ile	Leu	Ile	Arg	Asp	Ile	Thr	Phe	Val	Ser	Lys	Asp	Ala
225					230					235					240
Pro	Gly	Tyr	Lys	Tyr	Ile	Pro	Asn	Lys	Arg	Ile	Ala	Ala	Lys	Ile	Ile
				245					250					255	
Glu	Asp	Leu	Asp	Gly	Ile	Ile	Asn	Asp	Phe	Phe	Lys	Asn	Thr	Gly	Lys
			260					265					270		
Asp	Lys	Pro	Ser	Leu	Glu	Lys	Leu	Lys	Asp	Thr	Glu	Phe	His	Lys	Lys
		275					280					285			
Tyr	Leu	Asn	Ser	Thr	Glu	Pro	Tyr	Ser	Ile	Glu	Thr	Asn	Leu	Pro	Ser
	290					295					300				
Asn	Tyr	Lys	Glu	Leu	Lys	Glu	Lys	Gln	Ile	Lys	Lys	Leu	Glu	Tyr	Gly
305					310					315					320
Tyr	Lys	Lys	Ser	Ser	Lys	Ile	Tyr	Thr	Ser	Ala	His	Tyr	Ala	Leu	Tyr
				325					330					335	

Ser Glu Glu Ile Asp Ala Ala Lys Glu Leu Leu Gln Lys Val Lys Ile  
 340 345 350  
 Ala Lys Asp Asn Tyr Asn Glu Ile Lys Ser Met Asn Leu Ser Pro Ser  
 355 360 365  
 Ile Phe Asn Gln Tyr Leu Gln Leu Leu Gln Ile Val Ile Ser Ser Glu  
 370 375 380  
 Ile Asn Leu Lys Lys Ala Leu Asp Asn Thr Val Asp Leu Pro Ile Glu  
 385 390 395 400  
 Asn Asn Phe Asn Thr Leu Asp Ile Gln Tyr Asn Lys Leu Asp Thr Ala  
 405 410 415  
 Ile Lys Ser Leu Arg Lys Phe Val Thr Lys Tyr Lys Gln Glu Val Arg  
 420 425 430  
 Lys Ala Thr Lys Ser Tyr Ser Lys Lys Glu Leu Val Asn Ala Glu Leu  
 435 440 445  
 Thr Lys Val Ile Ser Asn Asp Asn Ile Leu Leu Asp Met Gln Ala Ile  
 450 455 460  
 Ser Ser Asn Tyr Gly Ser Thr Lys Lys Phe Val Tyr Ser Val Lys Arg  
 465 470 475 480  
 Leu Pro Tyr Val Pro Gln Val Ile Met Thr Thr Thr Ser Asn Val Leu  
 485 490 495  
 Met Pro Gln Lys Gln Val Glu Lys Val Lys Leu Leu Thr Pro Phe Thr  
 500 505 510  
 Ile Ser Asn Lys Glu Val Leu Asn His Asp Ser Leu Val Glu Asn Asp  
 515 520 525  
 Ala Gln Lys Gln Lys Val Glu Gln Glu Lys Thr Lys Ser Leu Ala Pro  
 530 535 540  
 Gln Lys Gly Ala Val Lys Glu Gln Thr Glu Gln Lys Val Ser Gly Asn  
 545 550 555 560  
 Thr Gln Glu Ile Glu Lys Lys Ser Glu Thr Val Ala Thr Pro Gln Gln  
 565 570 575  
 Ser Ser Val Ala Gln Thr Ser Val Gln Gln Pro Ala Pro Val Gln Ser  
 580 585 590  
 Val Val Gln Glu Ser Lys Ala Ser Gln Glu Glu Ile Asn Ala Ala His  
 595 600 605  
 Asp Ala Ile Ser Ala Tyr Lys Ser Thr Val Asn Ile Ala Asn Thr Ala  
 610 615 620  
 Gly Val Thr Thr Ala Glu Met Thr Thr Leu Ile Asn Thr Gln Thr Ser  
 625 630 635 640

Asn Leu Ser Asp Val Glu Lys Ala Leu Gly Asn Asn Lys Val Asn Asn  
                   645                  650                  655

Gly Ala Val Asn Val Leu Arg Glu Asp Thr Ala Arg Leu Glu Asn Met  
                   660                  665                  670

Ile Trp Asn Arg Ala Tyr Gln Ala Ile Glu Glu Phe Asn Val Ala Arg  
                   675                  680                  685

Asn Thr Tyr Asn Asn Gln Ile Lys Thr Glu Thr Val Pro Val Asp Asn  
                   690                  695                  700

Asp Ile Glu Ala Ile Leu Ala Gly Ser Gln Ala Lys Ile Ser His Leu  
 705                  710                  715                  720

Asp Asn Arg Ile Gly Ala Arg His Met Asp Gln Ala Phe Val Ala Ser  
                   725                  730                  735

Leu Leu Glu Val Thr Glu Met Ser Lys Ser Ile Ser Ser Arg Ile Lys  
                   740                  745                  750

Glu